THE JOURNAL OF GAS LIGHTING
WATER SUPPLY & SANITARY IMPROVEMENT

VOL. LXXXVI. No. 2140.] LONDON, MAY 17, 1904. [56TH YEAR. PRICE 6d.

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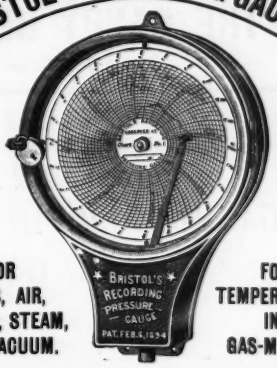

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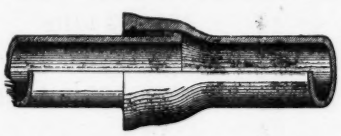

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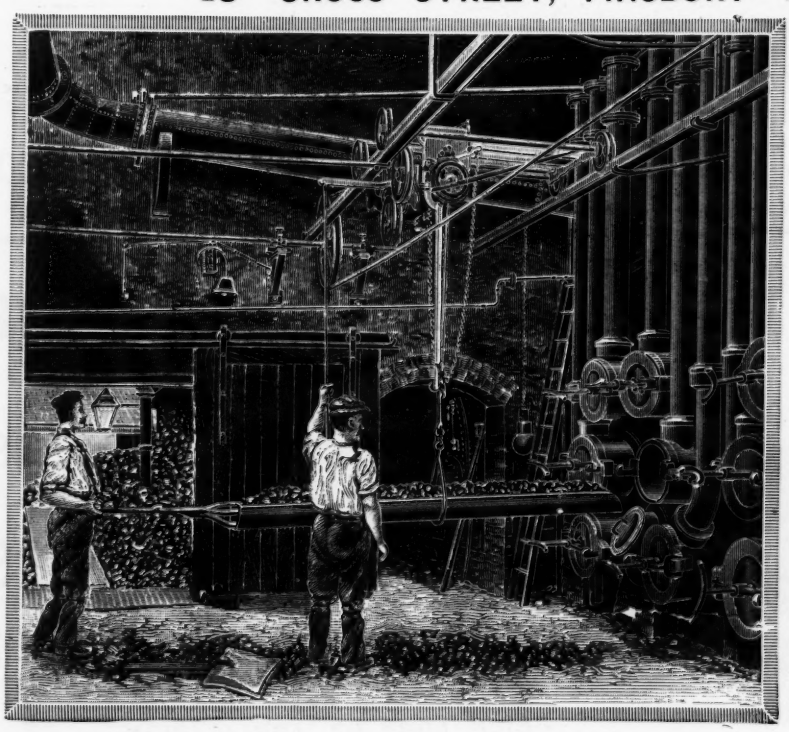

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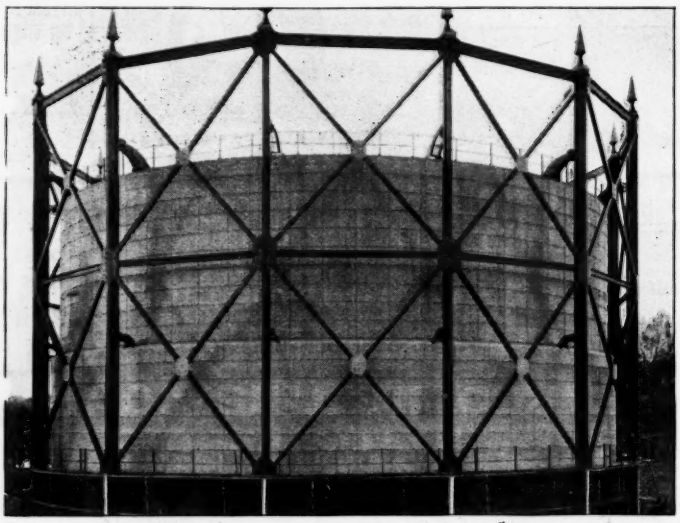

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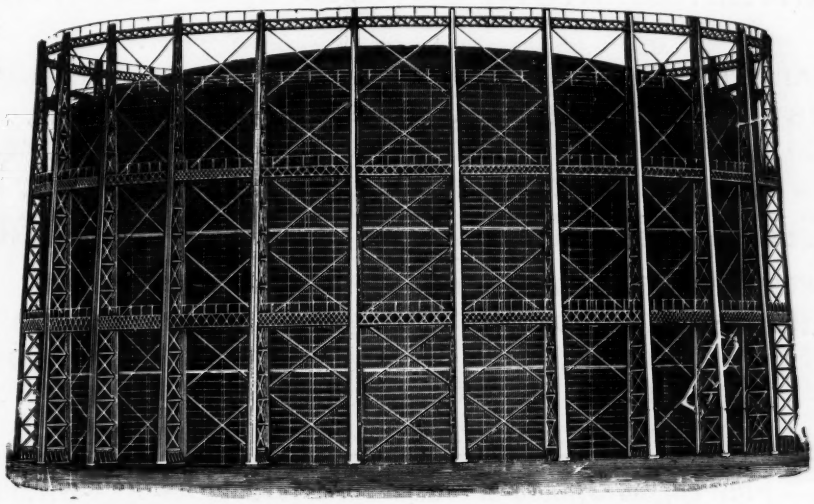

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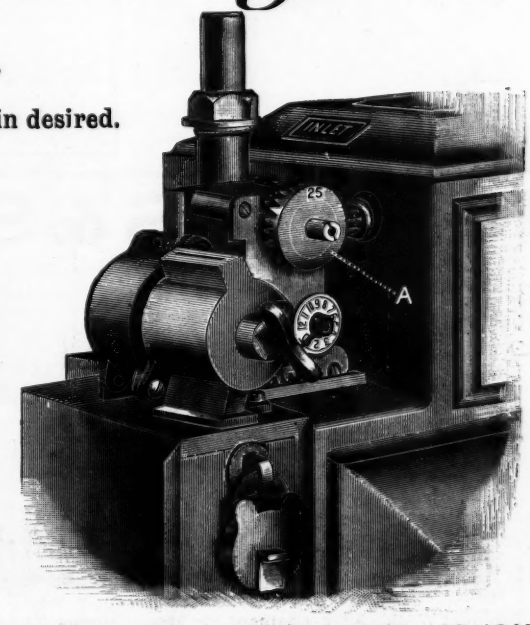

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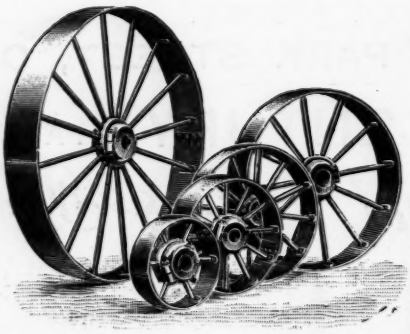

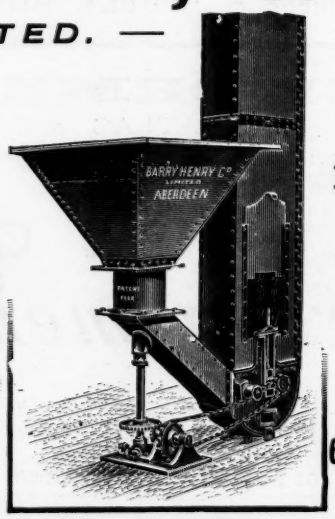

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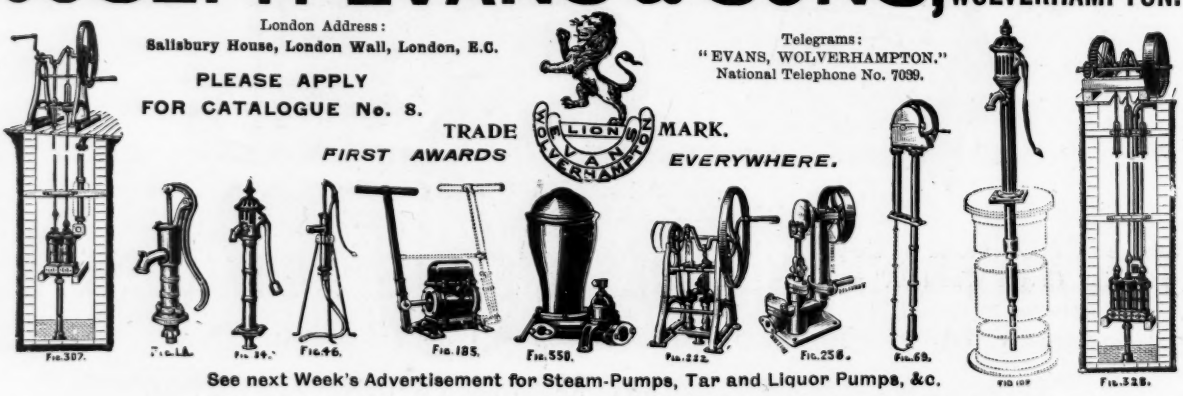

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Each Burner of Varying Power.

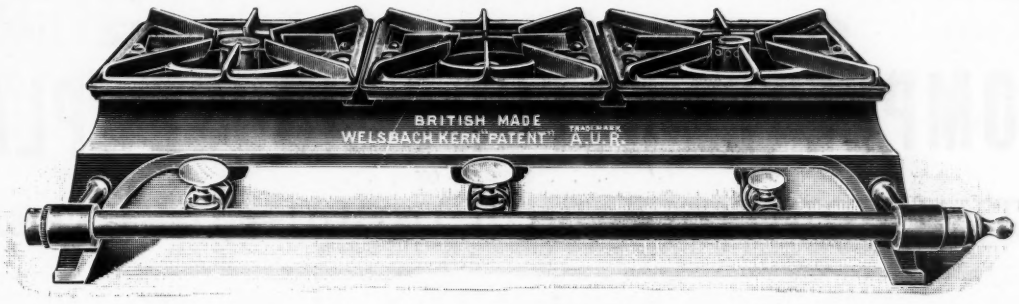
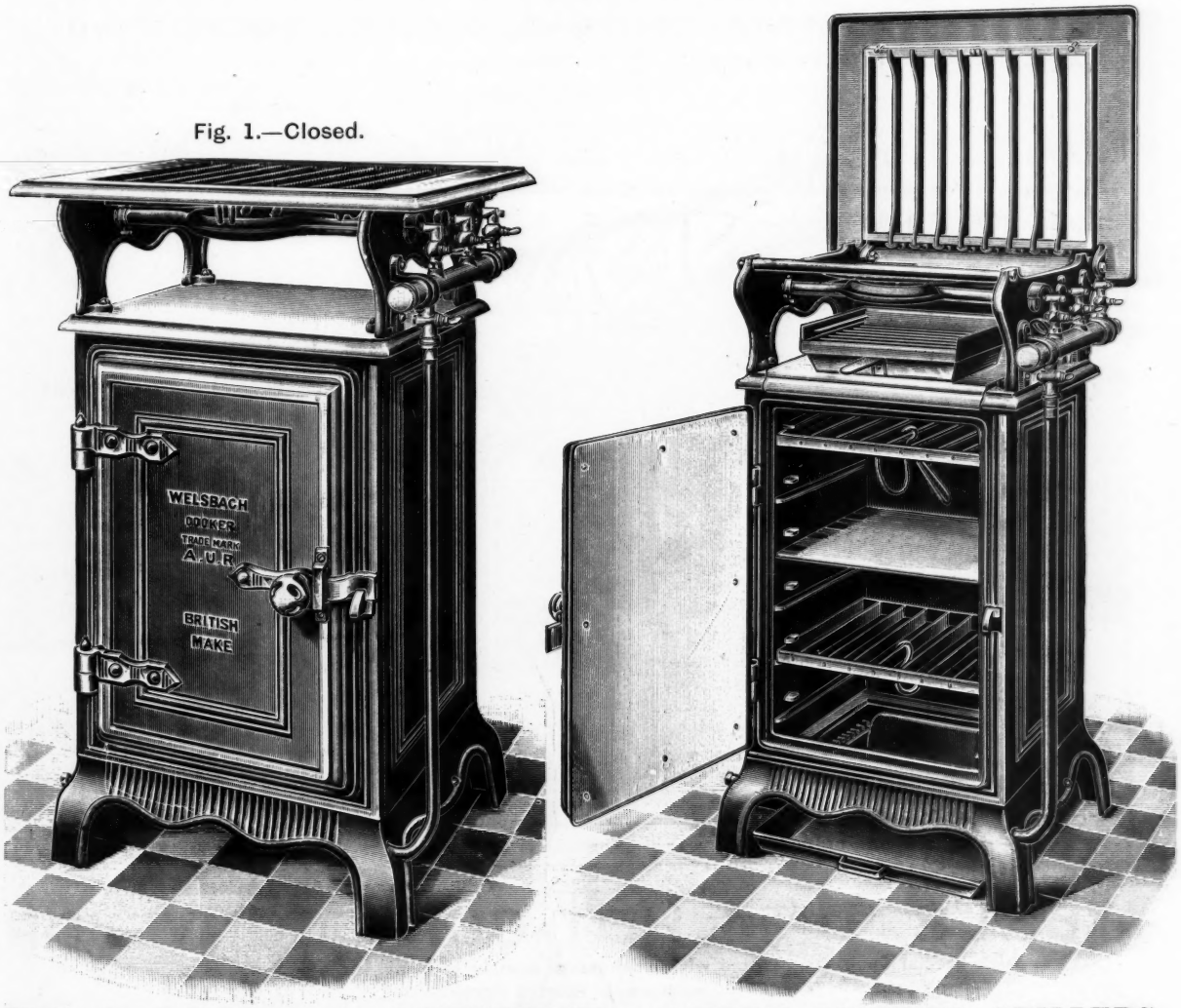


Fig. 2.—Open.

Fig. 1.—Closed.



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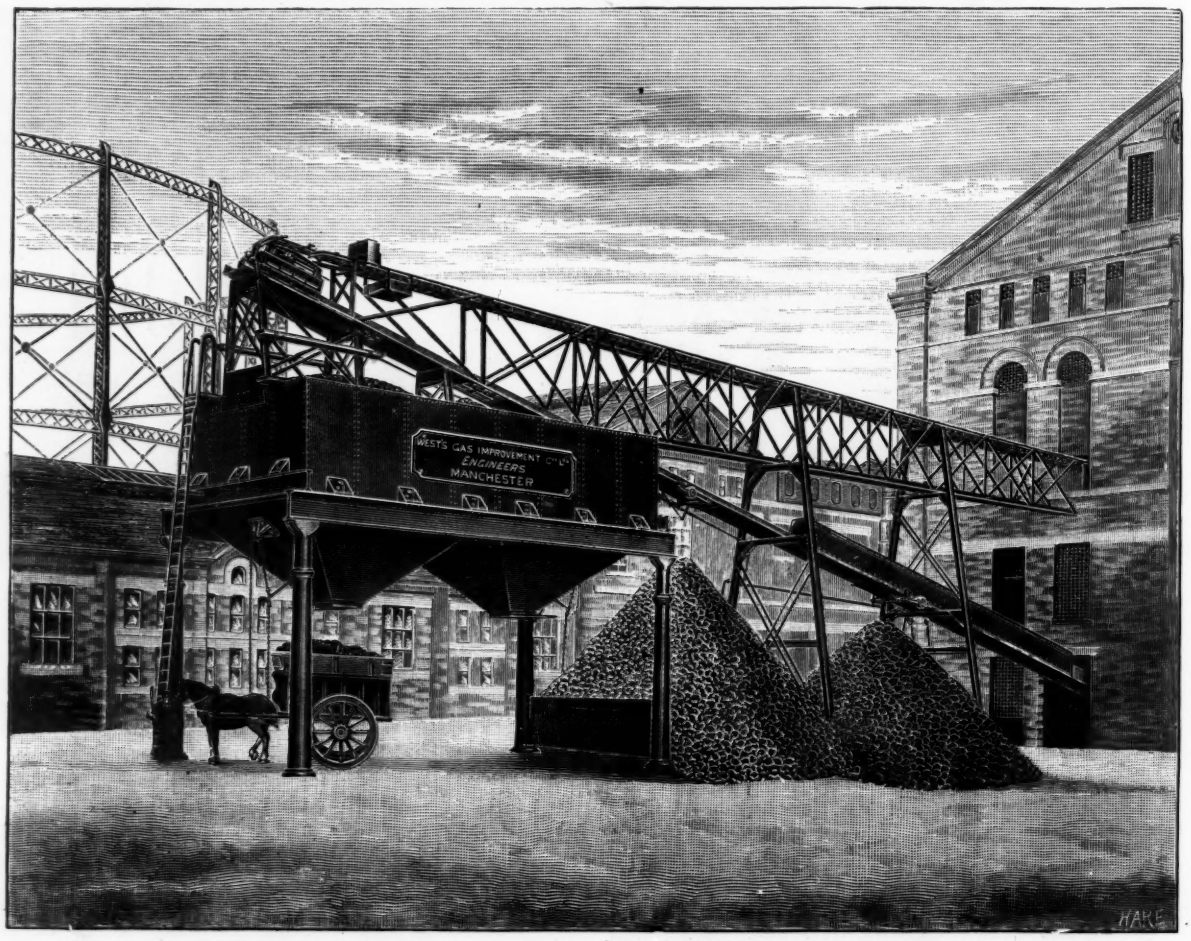

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Manufacturers for America: Riter-Conley Manufacturing Company, Pittsburg.

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Prof. Drehschmidt's article, with Tables and Diagrams, showing the advantages of the **MILLENNIUM SYSTEM** over Intensified Gas and Electric Arc appeared in this "JOURNAL."

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The MILLENNIUM SYSTEM has been adopted by Berlin, "The Best Lighted City," at a preliminary cost of 1,000,000 marks.

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Peers' Court of the Houses of Parliament.
Dent-Allcroft's Glove Warehouses, London; Aylesbury Town Hall Market, and Public Offices,

and have been unanimously requested by the Council to take over the Public Lighting of the Town. **Millbay Docks and Harbour for the Great Western Railway Company.**

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We have hundreds of Installations running; and we have never had a failure, and never a complaint.

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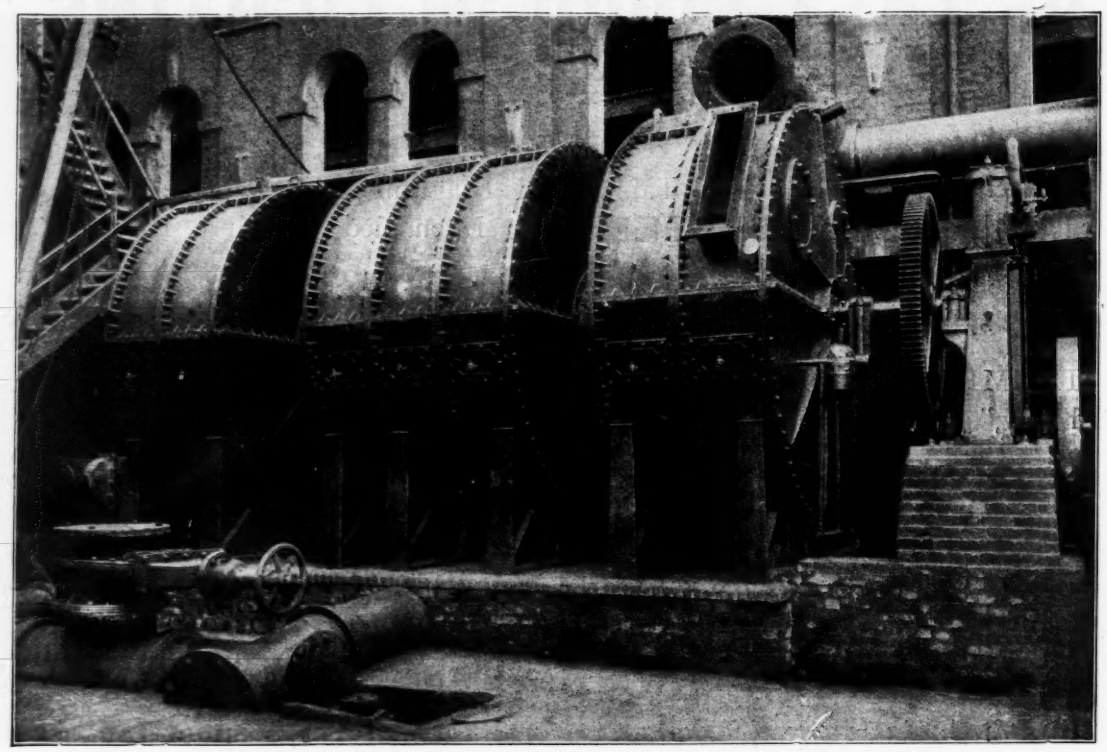
Extracts ALL the Ammonia and large proportion of CO_2 and H_2S.



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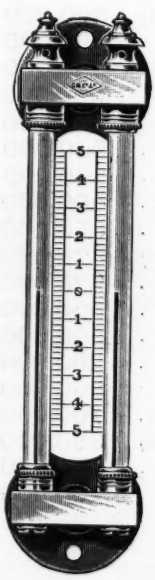

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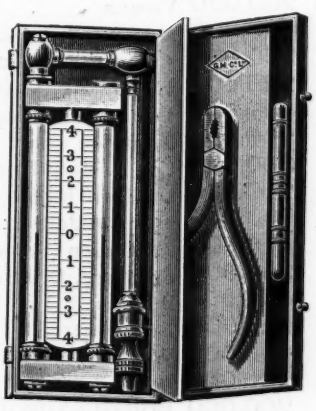

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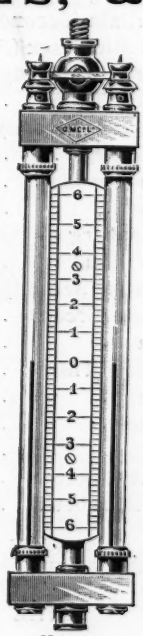

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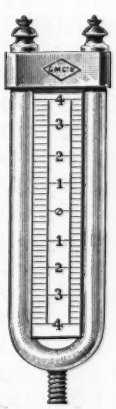

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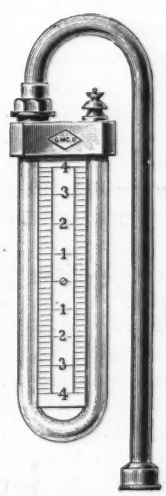

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DOUBLE-SUPERHEATER SYSTEM.

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Copenhagen (Second)	2,500,000	St. Joseph, Mo.	750,000	Epsom	225,000
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Belfast (Second)	4,500,000	Lea Bridge (Second)	350,000	Wandsworth & Putney	1,800,000
Brussels—Ville	750,000	Stockton-on-Tees	500,000	Aarhus	800,000
Brussels—Ville (Second)	750,000	Edinburgh	2,000,000	Falmouth	150,000
Liverpool	3,500,000	Guildford	350,000	Southampton	800,000
Liverpool (Second)	4,500,000	Brentford	1,200,000	Hartlepool	750,000
Tottenham	750,000	Syracuse, N.Y.	850,000	Utrecht	1,000,000
Tottenham (Second)	750,000	Bridlington	150,000	Deventer	150,000
Santiago de Cuba.	400,000	Middlesbrough	1,250,000	Portsmouth	1,000,000
Swansea	750,000	Croydon	1,250,000	Bournemouth	1,000,000
Manchester	3,500,000	L. & N.W. Rly., Crewe	700,000	Aylesbury	150,000
Brighton	1,750,000	Taunton	225,000	Hamburg	1,750,000
Preston	1,400,000	Lawrence, Mass.	400,000	Redhill	275,000
New York	1,200,000	Commercial Gas Co.	850,000	Dublin	2,000,000
Southport	750,000	Commercial (Second)	850,000	Posen	450,000
Bath	1,000,000	Commercial (Third)	1,250,000	Dunedin, N.Z.	150,000
Newburgh, N.Y.	350,000	Rotterdam	850,000	Lincoln	500,000
Newburgh (Second)	250,000	Dorking	150,000	Brighton (Second)	1,850,000
Hoylake	125,000	McKeesport, Pa.	500,000	Stockport (Second)	600,000
Coventry	600,000	G. L. & C. Co., Bromley	3,750,000	Croydon (Second)	625,000
Coventry (Second)	600,000	G. L. & C. Co., Nine Elms	2,750,000	Maidenhead (Second)	225,000
Bordentown, N.J.	125,000	Durham	200,000	G. L. & C. Co., Beckton	2,250,000
Winchester	225,000	New York	4,000,000	G. L. & C. Co., Fulham	1,750,000
Shanghai	225,000	Scarborough	800,000	Watford	300,000
Stockport	600,000	Perth, W.A.	125,000	Eastbourne	1,250,000
Norwich	1,000,000	Bremen	550,000		

Since Jan. 1st, 1900.

Antwerp	1,500,000	Waltham	400,000	Sydney—Harbour (Second)	500,000
Brussels—Forest	1,000,000	Geneva	500,000	Sydney—Mortlake (Second)	500,000
Tottenham (Third)	350,000	The Hague	1,000,000	Watford (Second)	350,000
Sydney (Harbour)	500,000	Romford	300,000	Southport (Second)	900,000
Sydney (Mortlake)	500,000	Göteborg	300,000	**FOR THIS YEAR'S CONSTRUCTION.**	
Manchester (Second)	3,500,000	Carlisle	600,000	Dunedin (Second)	275,000
Longton	600,000	Redhill (Second)	300,000	Taunton (Second)	350,000
Hull	1,500,000	Heidelberg	200,000	Bognor	100,000
St. Gallen	225,000	Rotterdam (Second)	1,500,000	Bournemouth (Second)	500,000
Colney Hatch	400,000	North Middlesex (Second)	200,000	Vienna	3,500,000
Dublin (Second)	2,000,000	Rotterdam (Third)	750,000	Maastricht	200,000
Birmingham	1,500,000	Merthyr Tydfil	300,000	Antwerp (Second)	1,000,000
Tunbridge Wells	1,000,000	Shanghai (Second)	225,000	Tottenham (Fifth)	1,000,000
Faversham	200,000	Magdeburg	1,400,000	The Hague (Second)	500,000
Staines	600,000	Posen (Second)	700,000	Hampton Court	500,000
Commercial (Fourth)	2,000,000	Barrow	300,000	Lea Bridge (Third)	400,000
Southampton (Second)	500,000	Reichenberg	200,000	Dublin (Third)	650,000
Liége	1,000,000	West Ham	1,500,000	North Middlesex (Third)	75,000
Hebden Bridge	200,000	Deventer (Second)	200,000	St. Gallen (Second)	225,000
Chorley	300,000	Bremen (Second)	950,000	St. Josse, Brussels	1,000,000
Stafford	500,000	Malta	400,000	Dundee	1,500,000
Bridlington (Second)	200,000	Croydon (Third)	625,000	Bridgwater	200,000
Beckton (Second)	10,750,000	Tilburg	400,000	West Ham (Second)	800,000
Tottenham (Fourth)	1,000,000	Ostend	100,000	Brieg, Silesia	100,000
Gosport	200,000	Zwolle	200,000	Brussels—Ville (Fourth)	350,000
Brussels—Ville (Third)	1,500,000	Utrecht (Second)	1,000,000	Innsbruck, Austria	200,000
Swansea (Second)	1,000,000	Port Elizabeth	400,000	Marlborough	100,000

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EDITORIAL NOTES—GAS, &c.

Mr. Carpenter before the Traffic Commissioners.

THE Royal Commission on London Traffic are approaching the end of their labours. With the evidence of Mr. Charles Carpenter, for the South Metropolitan Company, last Thursday, the testimony of the London Gas Companies was finished; and there are but few left of the number of witnesses who have been summoned to give, or who have proffered, evidence. The Commissioners have now the most difficult part of their task before them, and that is the declaration of their judgment in the form of a report and recommendations. All interested in any way in the problem of the amelioration of the conditions of London streets will watch for the report with some inquisitiveness. Our interest as citizens will, of course, extend to the whole of the report; but in these pages we shall only be directly concerned with what may be said affecting the subterranean use of the streets and the breaking up of their surface in connection with such use. Whatever the Commissioners may have thought before, after hearing the evidence of Mr. H. E. Jones, Mr. G. F. L. Foulger, and now Mr. Carpenter, together with the indisputable statistics that have been submitted by them, there cannot possibly be any doubt now in the minds of the members that, in the crowded thoroughfares of the Metropolis, the Gas Companies have been of the least of the public offenders in respect of the troubles which have eventuated in this inquiry, and that electrical, telephone, and tramway works have been far and away the greater. The people of London, like the inhabitants of all other towns, will have new public services; and to get them, they must, of course, put up with some temporary inconvenience. But in the laying down of these new services, method and all consideration of the requirements of the vast traffic in London streets have been thrown to the winds. Whole streets have time after time been subjected to disgraceful disorder; and the oldest occupiers of the soil have, with traditional consistency, been made in the public prints the chief scapegoats. It is hoped that one result of the Traffic Commissioners' inquiry will be to shift the burden of transgression on to the proper shoulders; and so set matters right in this regard.

It is in one respect rather unfortunate for the Gas Companies that this inquiry has coincided with the enormous development of the prepayment meter system in London, as this has very largely assisted to swell to an abnormal degree the number of street openings for which the Companies are responsible, and which openings for this purpose are not likely to continue at anything like a *pari passu* rate. We trust that the Commissioners have fully grasped, from the evidence, the insignificant character of these openings both in size and duration, and the fact that they only affect side and back streets and the outskirts of the Companies' districts where the poorer class of the population are found, and not the main thoroughfares in which the rush of business and commerce produces the greatest amount of traffic. In fact, in such arteries of the Metropolis, the Gas Companies have rarely any occasion to interfere with the surfaces of the roadway or footpaths; and this was succinctly and forcibly pointed out by Mr. Carpenter in the opening of his evidence. He also showed that the whole practice in this matter of street works of the Company he represents is one of consideration for the general convenience; and it would be a difficult thing to put a finger on any neglect on their part of prevision or precaution to obviate the unnecessary tearing up of the roadways for their purposes.

Like those gas engineers who have preceded him before the Commissioners, Mr. Carpenter cannot see, under existing circumstances, the utility of constructing subways in the London streets, the building of which would cause an expense, upheaval, and dislocation of traffic terrible to contemplate. It must be that any such insane notion as the application of subways throughout the London streets is far from the minds of the Commissioners, but their questioning of witnesses appears to suggest that they are harbouring some idea of the possibility of subways being built in the main thoroughfares. Neither to the Gas nor the Water Companies would these now have any compensating value for the enormous outlay which the removal of their pipes into them would occasion. In regard both to notices respecting the execution of work and the subsequent supervision, Mr. Carpenter cannot see that any improvement could be made upon the present system; and he must have left the Commissioners conclusively convinced as to the objection the Gas Companies would have to the London County Council being constituted a central authority in these matters. He drove this home in the last words of his evidence. "The "system," he said, "under which we have worked has been "productive of the minimum of friction; whereas under "the London County Council, there would be the maximum "of friction." The Gas Companies have done their best to put the real state of matters so far as they are themselves concerned before the Commissioners. To see with what effect, we must wait for the report of the latter.

Local Authorities' Gas Managers and their Expenses when Attending Professional Meetings.

THE attention of the Council of the Institution of Gas Engineers should be directed to the hard case of gas managers in the employment of Urban District Councils and Rural District Councils, whose allowances for the necessary expenses of attending the meetings of the Institution can apparently be disallowed at will by the Auditors of the Local Government Board. Information has just reached us of certain proceedings in this regard, which have had the regrettable effect of keeping away one member of the Institution, who testifies to the benefit both he and his present employers have derived from his past participation in the meetings. His stipend is not on such a liberal scale that he can afford to attend distant professional gatherings at his own expense; and even where this might perhaps be done, at the sacrifice of a hard-working man's holiday, the circumstance of the Local Government Board's frowning on these meetings will tend to depreciate their value in the eyes of the local authorities. It will be only a step to the forbidding of attendance at the meetings of those who are responsible to such authorities for the proper use of their time. It behoves the Council of the Institution, therefore, to take action in the matter before the practice of the Local Government Board becomes a hard-and-fast rule. There is an excellent opportunity just now for such action to be taken, inasmuch as the Council can represent to the Board that the Institution is incorporated as the sole organization for the advancement of the gas industry, and that gas managers who are prevented from taking part in the annual conferences must be deprived of a means of improving their technical information for the lack of which they and their employers must suffer. It does not come at all well from the Department in Whitehall to deny the poorer gas managers in small and remote places their only opportunity of conferring with their colleagues; and persistence in this injurious ruling will have the effect of deterring the most promising young men from taking employment with the local authorities subject to it. All this, and a great deal more that will suggest itself when the subject is further gone into, should certainly be laid in an authoritative way before the Department without unnecessary delay.

It seems that the disallowance in question has been based on a literal application of law. There does not appear to be any express sanction in an Act of Parliament for charging in a gas manager's accounts his expenses for attending a meeting of the Institution of Gas Engineers. Such a meeting is held by the Board not to be a conference within the meaning of the Public Health and Local Government Conferences Act, 1885. For the benefit of those who have never heard of this Act, it may be explained that it is an Act of one clause, which authorizes "any local authority," when so empowered by the Local Government Board, to "pay the

"reasonable expenses of any member or members or clerk "to the local authority attending any conference or meeting "of members of local authorities held for the purpose of dis- "cussing any matter which is connected with the duties "which devolve upon them." It appears that the Local Government Board have an equitable jurisdiction as regards the remission of disallowances made by their Auditors in certain instances; and in the case of which information has reached us, this was done upon the understanding that the "offence" is not to be repeated. Sensible people will have no hesitation in forming the judgment that such a ruling is a monstrous piece of red-tape administration. Whereas all the crying scandal of local authorities' "deputations" must be sanctioned under this clause, a gas manager shut up all the year in a place where he can never see a professional friend, is surcharged if he goes to learn how the world wags outside his niche! It is preposterous, especially when it is remembered that the cited Act does not apply to the urban authority of any borough. The truly municipal gas manager can, therefore, be encouraged to expand his mind; while his humbler brother of the suburban or rural authority must stay at home. Surely, such an unequal state of things only needs to be properly brought before the President of the Local Government Board to be corrected.

The Omagh and other Awards in Arbitrations.

THE award in the Omagh arbitration has been duly given, and the full particulars will be found in another column. Following as it does closely upon the publication of the results of the Chard and Nantwich arbitrations, this confirmation of the high value of gas companies' property, in the circumstances, is bound to have a profound effect. To put the facts in the strongest light, it is only necessary to state the principal figures. The Chard Gas Company are awarded £35,240, with costs on both sides, for their undertaking, which returned a net profit last year of £1492. The Nantwich proprietors get £68,148; and last year's profit was £2829. The Omagh compensation is £26,880, for expropriation of earnings of about £1000 a year. This is a crude way of stating the determining facts; but it is better for the present purpose to take the face value of the goods as they lie on the counter. What is really bought in these bargains is, of course, the maintainable profit; and we are not now going to usurp the function of the experts in such matters by offering observations on the true way of ascertaining this datum. Better allow it to be understood that any public authority who may be wishful to buy up a gas company in an ordinarily good way of business and condition, will have to pay 26 years' purchase of the clear maintainable profits, or thereabouts, even if the undertaking is not a statutory one. What difference the possession by the company of full statutory powers would make, it is not easy to estimate.

It is much to be regretted that in these arbitration cases, as in the notorious example of the Marylebone electricity supply case, there has been some futile and undignified cavilling over the amount of the award. The evenness of the results, in these gas arbitrations, furnishes further proof, if such were needed, of the fairness of the awards. But, in point of fact, it would not have lain in anybody's mouth to complain of the result, whatever it might have been in any particular case, unless some proper and adequate ground for questioning it could be shown to exist. Parties to an arbitration bind themselves to abide by the result; and to grumble publicly because one is disappointed with the outcome, is really a reflection on one's judgment in consenting to a reference. There is more satisfaction in classifying the results of these gas arbitrations, with that in the Marylebone instance, as furnishing some support for the observation of the Chancellor of the Exchequer on the desirability of local authorities' exercising restraint upon their trading aspirations. The proper view of this matter is really that to which we gave expression last week in the "Editorial Note" on "Checking the Increase of Municipal Debt." It is in the part of Sir Albert Rollit, as official spokesman for the associated municipalities of the kingdom, to protest that these bodies cannot call a halt in their borrowings at the instance of the National Government; but the plain fact of the matter is, that nobody wants the local authorities to do what those now in question have done. Here is so much to be added to the local debt, for a purpose that had better have been left alone. The influences to be severely checked in this regard are those of the persons who, having persuaded themselves that the property which the authority covet may be bought for an old song, proceed to mislead others in the same sense. They all do it. The London County Council hugged themselves in the fond delusion that the property of the London Water Companies was only worth a fraction of what it proved to cost. They and their aiders and abettors declared that the supply was bad, inadequate, and generally overrated. The same was said of the electric light in Marylebone. It is a way of approaching a question of transfer by arbitration which is sure to lead to disillusionment.

Fortunately, proprietors of good gas stocks are not, for an estimate of the value of their holding, limited to the judgment of Arbitration Courts, trustworthy as this is in general; for the testimony of the market is good enough. Market quotations are, rightly, disallowed as evidence in transfer arbitrations; but the ordinary investor has more to do with them than he is likely to have with compulsory transfers. And gas stocks of the ordinary class have now recovered till they once more stand to return about 4 per cent. Again, this is equal to 25 years' purchase, as between willing buyers and sellers. In the meanwhile, local authorities find it difficult to raise money by loan at less than 4 per cent., to which the charge for redemption must be added. The traditional financial argument for municipalization, therefore, has vanished. These are considerations which, taken in conjunction with all the recent examples of the great truth that good properties are not to be had at "knock-out" prices, will do more than any quantity of talking to check the increase of municipal indebtedness for objects that can be renounced.

A Question of the Cost of Road Reinstatement.

IN our "Legal Intelligence" to-day will be found a report of an appeal case in which the issue was of importance to gas and water companies, tramway companies, and indeed all parties interested in road work and maintenance. The question was whether the New River Company are compellable to pay the Westminster Corporation, as part of the expense of reinstating roads opened for their purposes, an extra charge by way of percentage for the cost of superintendence. The Company had refused to pay a demand made by the Corporation for some work of this kind, which admittedly included an addition on prime cost of 10 per cent. for superintendence; and accordingly the Corporation summoned them before a Police Magistrate. At the hearing, the Company contended that there should be no charge for superintendence or supervision, though it was not disputed that this service was performed, for the reason that it is part of the general administrative duties which local authorities exist to discharge. On the other hand, the Corporation argued that they are entitled to recover the whole expense of, or to be fully indemnified for, all the work that they have to do in the matter of filling in trenches and restoring the streets to a state fit for traffic. The employment of officers to superintend and supervise such work is surely part of the ordinary and necessary expense attaching to it. The learned Magistrate was of opinion that the law is as it was interpreted by the Corporation; but he reserved the questions of the amount chargeable on this account, and how it should be calculated, pending the decision of the High Court as to whether the claim is one that can be legally made. The judgment of the Court is unanimously in favour of the legality of such a claim; and accordingly the Company's appeal from the Magistrate's decision failed, and the case was duly sent back to him to determine the amount and how it should be levied. The merits of this matter are plain. No business firm acts as a sub-contractor for nothing. The reasonableness of making a payment of 5 or sometimes 10 per cent. on the scheduled charges for road work, or the actual expenses of carrying out such work, is recognized in every modern agreement dealing with the subject. It is the duty of highway authorities to supervise the reinstatement of all roads that have been opened for main-laying purposes. Though companies who have statutory powers to open roads for this purpose are entitled to do all the work themselves, concurrent rights also rest in the authorities; and it is usually found expedient to agree with the latter for the after-supervision and reinstatement. That the terms for this work should include something for the control is indisputable.

Relaxing the Prepayment Meter Clauses.

It will come as a pleasant surprise to those who have not yet had to approach Parliament since the august authorities at Westminster have taken it into their heads to insert in Gas Bills the provisions known as the Derby prepayment meter clauses, to learn that these have been relaxed, in two important particulars, in the Chippenham Gas Bill and in one or both respects in the Yorktown and Blackwater Gas Bill, and that the variations, in the case of the former Bill, have passed the House of Commons, and have received the tacit, if not expressed, consent of Lord Balfour of Burleigh, acting for the Lord Chairman in the Upper House. The objection has been urged that 10d. per 1000 cubic feet upon the ordinary price of gas as fixed in the Metropolitan and Derby clauses is not a sufficient excess in many cases to cover all the charges connected with prepayment meters, fittings, and cookers. Now in the Chippenham case it has been definitely laid down that the 10d. only applies to the meter and ordinary fittings, and that 1s. may be the outside excess charge per 1000 cubic feet of gas when a cooker is also supplied. This special increase of 2d. for the cooker will assist to ease the minds of those managers who viewed the clauses as an impending evil. On all hands, again, the annual allowance of only 10 per cent. on the cost of a prepayment meter where no fittings were supplied, as enacted in the precedents, has been held by gas men to be insufficient to meet the charges imposed on the gas suppliers by the system. Sir Chandos Leigh appears to have been chiefly instrumental in bringing about a reasonable mitigation in this respect. In place of the 10 per cent. (which was inconvenient and difficult to collect), 6d. per 1000 cubic feet has now been granted both in the case of Chippenham and in Yorktown, though Sir Chandos is not altogether clear that 5d. would not be sufficient. These concessions to gas suppliers will be very thankfully received; but at the same time they are not an unmixed blessing. In a district where there are consumers with slot meters and fittings, others with slot meters, fittings, and cookers, and others again with slot meters only, there three different quantities of gas will have to be supplied for a penny. This will be a little confusing, and occasionally perhaps a source of error. But any inconvenience in this respect will weigh the lighter, in view of the reasonableness which has permitted the variations to be made to which attention is here directed.

The Association of Municipal Corporations.

The annual meeting of the Association of Municipal Corporations was well attended this year, and the indispensable Sir Albert Rollit once more presided, and sang the praises of Municipalism in his usual masterly style. Among the subjects mentioned in his address was the new Borough Funds Act, which he described as the work of the Association. It has taken thirty years to get this amendment of the law passed by Parliament; and the fact illustrates the deliberation with which the legislative machine operates. The President referred to the case of the Metropolitan Borough of Marylebone as an example of the necessity for the Act; declaring that the absence of it was one of the chief causes of the complications that have happened in relation to the electricity supply of the borough. He explained this statement by showing that the notorious agreement was a *damnosa hereditas* from the old Vestry, who were not under the Borough Funds Act of 1872. This was as much as to say that if the ratepayers had had the opportunity for making their wishes felt which they now enjoy, the transaction in question would never have been concluded. This is to admit that local authorities may occasionally misunderstand their duty to the ratepayers, which was a candid confession from the spokesman of all the Town Clerks of the kingdom. Sir Albert Rollit likewise took credit to the Association for their part in extending the jurisdiction of County Courts, which he described as calculated to be of great benefit to those who have the misfortune to be litigants. The new Act, he said, "will put a stop to much "denial of justice, to the law's delays, and to excessive "costs, and will tend to limit the Long Vacation and the "evils of the obsolete Circuit system." If it does but a part of this, the Act will amply justify the existence of the Association, and of every organization that helped its passing.

Commenting upon the proposal for the assessment and rating of land values, Sir Albert Rollit said this has not only supplemented illusory proposals for the taxation of ground rents, but "has been raised recently from the rank "of a political or party to that of a municipal question." The idea is that landowners should be caused to contribute directly to local revenues. It is understood that the Bill cannot go farther this session, and meanwhile efforts are invited to make it a fair and practical measure of local revenue and taxation, so that the "unearned increment" of value of land shall be openly, plainly, and directly tapped in aid of the rates. Consideration of this topic led the President up to the Valuation Bill. Curiosity might well be felt as to the way in which the Association would regard this measure; and it is not surprising to learn that, on the whole, the opinion is favourable. Sir Albert Rollit also thinks that the time is ripe for the codification of the law of public health, comprising as it does some forty Acts of Parliament and innumerable cases. The large number of clauses inserted in Municipal Private Bills should also be embodied as model clauses and made adoptive. The Association favours the extension of the Provisional Order system of obtaining statutory powers, accompanied by the hearing of Bills by a Joint Committee of both Houses of Parliament. Lastly, an effort is being made to raise the status of the Local Government Board and its President to that of a Secretaryship of State. Naturally, the strictures passed by the Chancellor of the Exchequer on the extravagant borrowing propensities of municipalities were not to the taste of Sir Albert Rollit.

In the course of the proceedings of the conference, the Town Clerk of Wisbech brought forward a motion declaring it to be expedient "that statutory powers be given to "municipalities generally to sell or hire electric wires, "motors, lamps, and fittings, and to fix the same on con-"sumers' premises." The resolution was, however, referred to the Council on the suggestion of the President, who observed that the proposition raised some very wide considerations indeed. By a coincidence, the subject of municipal book-keeping and the efficient auditing of local authorities' accounts, which is a sore point just now with the Association, was discussed last week at the annual meeting of the Society of Accountants and Auditors. The President of the Society, Mr. Charles H. Wilson, gave evidence on the subject before the Joint Committee, which presented a report of a most sweeping character. It was stated in it that no effective system of audit of local authorities' accounts exists; and so the Committee recommended that Auditors, being members of the regular professional organizations, should be appointed to perform this necessary task.

Lights and Lamps for Street Lighting.

It is not much to be wondered at that the partisans of the electric light for street lighting experience some difficulty in realizing that they are beaten by gas. Here and there in the electrical journals the need is shown for something in the way of electricity to effectively compete with the incandescent gas-light; but there is no answer. This is the tone of despair in which the present state of the competition is referred to in one quarter: "The value of a golden yellow light "for street lighting purposes is so apparent to all, that it "can only be a matter of time ere a satisfactory lamp is "evolved for the purpose." Alas! the history of human desires that have remained ungratified is a long one. If demand always created supply, the world would be a very different place to live in. In the present instance, the confession that no electric arc lamp of the golden yellow variety—the name is reminiscent of a prize mangold—is at present satisfactory, is more to the point than any aspirations based on that fact. The same witness, whose candour cannot be doubted, looks upon it as curious that "in rural or urban "districts the Nernst and incandescent electric lamps are "being extended; in cities, the gas-mantle seems to hold its "own." The truth here probably is, that whereas in cities and large centres of population competent attention, backed by experience, is given to the solution of the problem of efficient and economical lighting, there are still a few out-of-the-way places where electric light in the roads is a new toy. In good time the fate of all toys will overtake these also. It is the plain fact that the Nernst lamp does not commend itself to the lighting authorities of important thoroughfares; and there is nothing between these most disappointing things and the ordinary arc lamp. The observation is made that

"when a change is contemplated, electricity must show a "greater illumination than gas; and this cannot be obtained "unless arc lamps are employed." This gives up the Nernst lamp as a bad job, for all the imaginary rating of candle power upon which it is sold. The remarkable conclusion of all this, however, is that "every increase made in the "brilliancy of public lighting is to be welcomed by the elec- "trical engineer, for it is only a question of time when the "stage will be reached when the arc lamp will be requisi- "tioned to satisfy the desire for high illuminating values at "low cost." It seems to be overlooked that the course of development has been in the opposite direction, and that it is the high-power gas-light which is superseding the electric arc, tried and found to be not worth its cost.

The Manchester District Institution at Stoke-upon-Trent.

A full and highly interesting programme was prepared for the spring meeting of the members of the Manchester District Institution of Gas Engineers at Stoke-upon-Trent on Saturday; and it was carried through without a hitch, under the supervision of Mr. W. Prince, the Gas Engineer and Manager to the Stoke Corporation, the President of the Institution (Mr. H. Townsend, of Wakefield), and the Acting Secretary (Mr. R. G. Shadbolt, of Grantham). A long day's work had been cut out, and therefore about 25 members out of the 65 or 70 (including friends) who attended the meeting did well to spend Friday evening at Stoke, so as to be fresh for the following morning. Of the rest, a large proportion arrived sufficiently early on Saturday to join in all the visits. The first of these was to the tile and china works for which the town is so justly famous, and in which great interest was shown. From these the members were conveyed to the Fenton Gas-Works, where there was a demonstration of a fire extinguisher; and then they went on to the Stoke works. After luncheon, to which the members were courteously invited by Alderman Geen, they had a delightful drive to Trentham Park, and, by permission of his Grace the Duke of Sutherland, were permitted to visit the Hall, the beauties of which were greatly admired. The party were accompanied by Alderman Geen and the members of the Stoke Corporation Gas Committee, who all through had taken special interest in the proceedings. After tea, the business meeting was held, the principal item on the *agenda* being the affiliation question. It will be seen from the report which appears elsewhere that the resolution submitted to the members was carried without a dissentient voice. The day's proceedings were most interesting and successful; and the hearty thanks of the members were duly accorded to all who had contributed to the pleasure they had derived from them.

South London and the Lighting of Berlin.

Sir George Livesey was once heard to say that no one need go farther than South London to see a well-lighted area. Apparently he did not mean that by going elsewhere a better might not be seen; for the Board of the South Metropolitan Company have recently sent over to Berlin a dozen of their employees, with one from the Crystal Palace District Gas Company, to see what it really is they are doing in the city that makes it so often quoted as a model of what street lighting should be. The deputation have fulfilled their commission; and they have brought back the only report that anyone acquainted with the subject would expect of them. There is no occasion to go beyond our final article on the "Public Lights of London," which included a communication from the Chief Director of Public Lighting in Berlin, to learn wherein are the differences between the lighting of London and Berlin. The fault that London streets are not lighted equally as well as those of Berlin is that the authorities of the Chief City in the World are somewhat niggardly in the matter of expenditure on public lighting compared with the authorities of most of the principal Continental cities. As shown in the article above alluded to, there are in Berlin few electric arc lamps, and few electric incandescents. All the rest of the lighting is on the incandescent gas system. But unlike so many of the authorities in South London, Berlin is not content with single No. 2 burners in the street lamps. They go in largely for cluster and high-power lighting; and the single-burner lamps are of respectable light-giving size. The lamp columns, too, are situated closer together than in London; and in broad thoroughfares where there are electric arc lamps, incandescent gas-lamps are placed on the sidewalks. These comprise the differences found by the South London deputation; and they confirm previous knowledge on the subject. The deputation, it would appear from a statement by one of its members (in the "South London Press"), find great pleasure in reflecting that the splendid example of lighting witnessed in Berlin is obtained with only 12-candle power gas. However, the deputation had a very interesting and instructive experience; and they at all events will not, it is clear, be prepared to deny that the authorities of Berlin look after their public lighting much better than those of London. But they will also be the last to admit that, given the opportunity by the local authorities, the Gas Companies here would not do quite as well.

Incandescent Gas Ousts Electricity in Calcutta.

According to a leaderette in the Calcutta "Journal" for the 17th ult., the Corporation of Calcutta have abandoned electric lighting in the road in which it was in use, and reverted to gas. The reasons for this step will be gathered from the following particulars: For upwards of ten years the road in question has been lighted by electric arc lamps; and the experiment has not been by any means the success that was anticipated. Instead of being immensely proud of the distinction of living in the only street in Calcutta electrically lighted, it appears the residents have frequently petitioned the Corporation to remove the arc lamps. The vagaries of the light are shown in periodical intervals of complete darkness, succeeded by the flaring-up of the lights with dazzling brilliancy. In short, electricity, as applied in the road in question, has shown itself to be a fickle and unsatisfactory illuminant—as it has done in many other places. We learn from the article that the Tramway Company have obtained permission to run lines down the road, and Lucas lamps are to be placed on the sides instead of in the centre of the carriageway, with the object of ensuring a more uniform illumination. There cannot be the least doubt that there will be a vast improvement as the result of the change; but this will not be all. The electric light has been costing the Corporation about Rs. 13,000 annually, and the reversion to gas will reduce the expenditure to Rs. 8220 a year. The writer concludes by referring to the energy which the Oriental Gas Company are now infusing into the management of their business; and he says the day when electricity ousts gas from the city seems more remote than it did a few years ago. Such examples of electric lighting as the one above referred to will render its position more secure than ever.

The Prosperous State of the Gas Industry.

A very full share of the additional prosperity that cheaper coal and other propitious circumstances have brought within the grasp of the managers of gas undertakings all over the country has been enjoyed by the Burton-on-Trent Corporation, whose operations the last twelve months have resulted in the largest net surplus which has been attained since the works came into their possession. Increases in practically every item on the income side of the balance-sheet, and decreases on the expenditure side, make pleasant reading both for those who are interested in the Burton Gas-Works in particular and those who are concerned with the welfare of the industry generally. Such "signs of the times" as the accounts exhibit are of a most encouraging nature; but, in considering the results achieved, the importance of the personal equation—which, unfortunately, is not always so well understood by ratepayers and others as it should be—must by no means be overlooked. It has not been at Burton; for, when explaining the position of affairs to the Council, Alderman Lowe congratulated the Engineer and Manager (Mr. F. L. Ramsden) on the excellence of the report which the Gas Committee were enabled to present. This, of course, is as it should be. Cheap materials are not everything; good management also is needed in order that the fullest possible benefit may be derived from them. Of the net profit of over £12,000, £5000 (which is about the customary amount) is to be handed over in relief of the rates, another £5000 odd is to go towards wiping out the capital outlay on prepayment meters, fittings, and stoves, and the balance of nearly £2000 is to be carried to the reserve fund. With regard to the second item, it may be pointed out that, as the Local

Government Board only allow ten years for the repayment of loans for prepayment meters, fittings, and stoves, both Mr. Ramsden and the Borough Treasurer are strongly of opinion that it is better to pay for such things out of revenue, and have done with them. Accordingly, the Corporation intend to continue this policy of wiping out the £30,000 of capital already expended on prepayment meters, &c., and also to pay for them in future out of revenue. Seeing that the short-term loans granted necessitate the setting aside of 12 per cent. per annum for repayment and interest, it is easy to understand the desire to as far as possible dispense with them. In fact, the undertaking appears to be well on the way towards getting rid of loans of any kind, inasmuch as of the total capital expenditure of £206,688, no less a sum than £132,549 has been repaid, while there are reserve and depreciation funds amounting together to close upon £20,000.

The Temptation of a Reserve Fund.

It was announced last week that the Rochdale Corporation had hit upon a novel expedient for raising the necessary money to pay for the public lighting which it had been decided should in future be charged for instead of being carried out as heretofore at the cost of the Gas Department. A substantial reserve fund of some £20,000 has been built up with the object of providing a new retort-house, which it seems to be admitted is somewhat badly needed; and the financial condition of the town is such that (for the present occasion only) it was deemed advisable to take the £5000 required for the public lighting from this fund, rather than add it to the rates. Even with this concession, it appears that there is to be an increase in the total rates of the town, of 7d. in the pound; so that it is easy to comprehend the disinclination of the Finance Committee to take upon their shoulders the additional burden of the public lighting. One would have thought, however, that all the members of the Council would have been quite content with depleting the gas reserve fund to the extent mentioned; but this proved not to be the case, for when the estimates for general purposes were under consideration, an amendment was proposed that £10,000 odd should be taken from the fund instead of the £5000 agreed upon. Fortunately, this was defeated by a large majority; but the affair serves as a good illustration of the temptation to which the possession of a gas reserve fund may subject local authorities who are badly in need of cash. It was a poor return for the generous concession that had been made to contend that, if it was right for the Gas Committee to suggest that the Council should take £5000 from the reserve fund, it was only right that they should take the larger amount named, which would pay for the public lighting and also reduce the rates by 4d. in the pound. There may possibly be something to be said for the original proposal, inasmuch as hitherto the gas consumers have had to pay for the public lighting, and so probably will not seriously object to doing so for one year longer—which is practically what the arrangement amounts to. But it would be impossible to defend the taking of more than this from a fund which the Gas Committee have for a long time been struggling to build up in order to enable them to manufacture gas under the best conditions, merely because increased expenditure in other directions necessitates a rise in the rates. Surely the consumers have already paid handsomely enough for the privilege of receiving a gas supply at the hands of the Corporation in contributing £13,000 to the reduction of the rates, and paying for the public lighting, without having this additional injustice thrust upon them. The Gas Committee would do well to invest what remains of their reserve in the building of the contemplated retort-house at the earliest possible moment. So long as the money remains, and the town continues in its present financial condition, the fingers of some of the members of the Corporation will, it is to be feared, itch to lay hold of it—to make good the deficiencies on other accounts.

Ever Rising Rates.

That there is some ground for this fear is shown by a remark made by Alderman Gibson, of Manchester, in the course of an interview with some of the ratepayers in the Hulme district with regard to the threatened increase in the city rate. Alderman Gibson pointed out that this was a progressive age, and that people were constantly requesting parks, open spaces, baths, housing schemes, well-lighted streets, and other facilities, which could not be secured without the spending of large sums of money; and he said he thought the tendency of the rates would still be a rising one on account of the greater demands now made upon the Municipality. As the ambitions of the citizens of Manchester are probably no greater than those of other people, there is no reason to believe that the rates will take a different course elsewhere from what they do there. We are, however, pleased to note that, as a result of the request of the Manchester City Council to the Committees to revise their estimates for the ensuing year, a report has been prepared by the Finance Committee for presentation at the adjourned meeting of the Council to-morrow which will show an increase of 3d. on last year's rates, instead of the 8d. which was originally suggested. This, of course, has only been achieved by the rigorous cutting out of all but absolutely essential items of expenditure, and the granting of increased contributions by the profit-making Committees, including an extra £10,000 from the Gas Committee. The reduction of the proposed increase by 5d. in the pound is a material gain, for which the general body of ratepayers will no doubt be duly grateful. They will, however, in all probability find it very much more difficult to appreciate Alderman Gibson's declaration that the city has been becoming richer by a quarter-of-a-million sterling per year during the past ten years; and that, whereas if in 1894 all the debts had been paid there would have been a surplus of £2,500,000, to-day under the same circumstances there would be a surplus of £5,000,000. "Those are facts," concluded the Alderman. Very likely; but the ratepayers may ask whether the benefit they derive from them is at all commensurate with the prospect of an ever increasing burden in the shape of rates. In spite of the growth of the assets of the city, there seems but little prospect of the Corporation seeing their way to forego the annual heavy contribution of the Gas Committee in aid of the rates; but we shall nevertheless look forward with interest to the fulfilment of a promise made by Alderman Gibson in the course of the interview that he would take another opportunity of bringing before the Council his well-known view to the effect that the taking of money from the gas consumers in order to pay the rates of those who do not consume gas is "a radically wrong and unjust proceeding."

A Gas Company's Protest.

How gas companies are affected by this continuous growth of expenditure on local government, readers of the "JOURNAL," are, of course, only too well aware; and, as opportunity has offered, occasion has been taken to call the attention of consumers to the matter. For instance, the Gaslight and Coke Company print the following intimation on their bills: "The price charged for gas includes an amount of 2½d. per 1000 cubic feet, paid by the Company in the shape of rates to the Local Authorities, over whose expenditure the Directors have no control." This plain statement of fact has so excited (presumably) one of the consumers, that he has written off to the "Daily Chronicle" to ask why the Company draw special attention to the rates they pay—his own view being that they intend the householder to imagine he is paying 2½d. less per 1000 cubic feet. "He fears," remarks our contemporary, "that this evil example may spread, and that grocers, butchers, and other tradesmen who pay rates will also be pointing out that the price of the article they supply is not really what it pretends to be, as a reduction should be made for rates." The "Daily Chronicle" may be pardoned for declining the herculean task of putting this correspondent right (his remarks are published without comment); but it might perhaps with advantage have been pointed out to him that he had altogether overlooked the main point of the notice—*i.e.*, that the Company make this enormous contribution in the shape of rates to Local Authorities "over whose expenditure the Directors have no control." He might also have had his attention drawn to the fact that there are differences between the working of a statutory gas undertaking operating under the sliding-scale and the business carried on by a butcher or a grocer. But possibly even then he would not have been much wiser than he is now. The words "gas company" are evidently to him as is a red rag to a bull, which is the case with so many otherwise rational people.

Private Bill Procedure.

The Select Committee appointed by the House of Commons to consider the Private Bill Procedure (Wales) Bill have not been long in commencing to discharge their duty. Two days last week

found them sitting in one of the Committee rooms for the reception of evidence. Mr. Jeffreys is the Chairman; and among the several members are two lawyers whom, before they became members of the House, one was accustomed to see practising before the Select Committees on Private Bills. These are Mr. Cripps and Mr. Worsley Taylor; and there is no doubt that their experience will weigh well in the final result of this investigation. Though it is not overlooked that, if the findings of the Committee are favourable to further decentralization of Private Bill work, the decentralization cannot possibly stop at Scotland and Wales, there was comparatively little interest taken in the proceedings of the Committee—the few spectators consisting only of those who are professionally associated with the parliamentary inquiries carried on at Westminster. At the first sitting, the principal witnesses were Lord Balfour of Burleigh, the late Secretary for Scotland, and his successor in that office Mr. Graham Murray, both of whom possess full knowledge—excepting in regard to the relative financial result of the change—of how the Scottish procedure has worked. While both desire to allow the greatest amount of devolution without interfering with control by Parliament, they agree that what has worked well in Scotland may not work equally well in Wales or other parts of the kingdom—principally because the Scottish Office in London has a knowledge of local requirements which no one Government Department possesses regarding Wales. There are other reasons, too, why devolution cannot proceed to a great extent without considerable difficulty. Trouble would be met with in getting Committees to go wandering all over the country; and both promoters and opponents would not find it an easy matter to secure the services of Counsel and witnesses skilled and efficient in parliamentary practice and legislation. This has been a small difficulty in Scotland—it might not be a great one in Ireland; but it would undoubtedly be one in Wales, and in many parts of England, especially when several committees were conducting their inquiries simultaneously in different quarters of the country. There is one important question upon which the evidence as to the experience of Scotland is a little shady, and that is the one of expense. Neither Lord Balfour nor Mr. Murray was conspicuously clear on this matter; and from the hesitating way they spoke upon it, one rather distrusts the cry of those who believe that devolution means economy. It may give greater local satisfaction and convenience, and save the time of promoters and opponents; but little else. "I do not think," said Mr. Murray, "that there is a direct saving of expense by the change in Scotland; but I believe there is a certain saving." That does not go far in assisting one to an opinion. However, whatever happens, Lord Balfour sets himself sternly against any interference with the control of Parliament—especially "in relation to finance, borrowing powers, and the trading enterprises of corporations."

WATER AFFAIRS.

Passing of the West Middlesex Water Company.

HAVING a keen appreciation of the regret with which, owing to time or circumstances, old associations have to be broken and long-standing connections severed, we can fully sympathize with the Chairman of the West Middlesex Water Company, Mr. Edmund Boulnois, M.P., in the feeling of sorrow to which he gave expression when closing the proceedings at the half-yearly meeting of the proprietors last Tuesday; for, in the course of a few weeks, the undertaking with which he has for some years been closely identified will pass into other hands. If the Company had been granted two more years of existence, Mr. Boulnois might have had the gratification of celebrating the centenary of the undertaking, seeing that it was in 1806 that parliamentary powers were obtained for carrying out a scheme of water supply for the western district of London. Beginning with a $3\frac{1}{2}$ million gallon reservoir on Campden Hill, the Company have now storage capacity equal to about 400 million gallons, apart from their participation in the Staines scheme. From a modest £30,000, on which no dividend was paid for about a dozen years, and only a very small one for a considerable time afterwards, the capital sunk in the undertaking has grown to £1,986,228, in respect of £1,155,000 of which the fortunate proprietors last Friday received a dividend at the rate of 10 per cent. per annum. The Company have had a wealthy district to serve; and they have done it very well, for they have gradually extended the constant supply until all the consumers have the benefit of it. Moreover, they were able, out of their surplus profits, to allow them a substantial rebate on their water-rates, until interference with their affairs by outsiders necessitated its curtailment. For the past seven years, the business has been increasing in the neighbourhood of Willesden, owing to the rapidity with which all the available ground is being covered with houses and manufactories; and the Directors have laid a 30-inch main from Hammersmith so as to meet the demand. They have not left this duty to their successors, the Metropolitan Water Board, who, however, signified their approval of the proceeding; and quite rightly, seeing that they will be the parties to benefit by it. Though they offered only £1,500,000 for an undertaking for which its owners required about £2,700,000 more, the latter had the gratification of finding that the Arbitrators considered their figure more nearly represented the worth of the property than the other. When the Board enter into possession of it, they will find that the plant consists of something better than "old iron," and that the business will require all their skill in conducting it, if their management is not to contrast unfavourably with that of their predecessors.

Supply of Water in Out-Districts.

THE special case submitted by the Bilston Urban District Council for the opinion of the High Court on the construction of certain sections of two Local Acts (as reported in our "Legal Intelligence"), is another example of the complications which occasionally arise from the amendment of Acts to bring them into line with altered local circumstances, and the incorporation therein of provisions of other Acts intended to be of general application. Lord Dudley, the tenant for life of several houses in the parish of Himley—one being Himley House—required the Bilston Urban District Council to furnish him with a supply of water; and they declined to do so except on terms which were not in accordance with his Lordship's notions of their statutory powers. Under an Act of 1893, the Town Commissioners were authorized to lay pipes and supply water in certain parishes outside their prescribed area; and by the incorporation of the Water-Works Clauses Acts, 1847 and 1863, a person was entitled, under section 35 of the former Act, to demand and receive a supply of water on condition that he paid the rates prescribed in the Special Act and 10 per cent. of the cost of laying the mains to his premises, and also agreed to take a supply of water for at least three years. Under the Special Act, however, the owner or occupier of premises in three parishes named therein could demand a supply of water by paying at a rate not exceeding 70 per cent. of that charged in Bilston, *plus* an annual sum equivalent to 5 per cent. on the outlay incurred in laying the mains and pipes. By a subsequent Act, passed in 1896, the limits of supply were extended so as to include Himley; and a provision to the above effect was made applicable thereto. The defendant demanded a supply of water, for which he expressed his willingness to pay in accordance with the conditions laid down in the Special Acts of 1893 and 1896; but the Council refused it, on the ground that he was not entitled to ask for it unless they were required to lay pipes into the district by a sufficient number of owners and occupiers to make the aggregate amount of water-rate payable by them annually not less than one-tenth of the outlay, and by the applicants severally agreeing to take water for three years in succession. The question for the Court was whether or not the Council were justified in imposing these conditions upon the defendant; and Justice Channell decided that they were—that is to say, that the 35th section of the Act of 1847 applied to the parish of Himley. In the circumstances, therefore, the General Act overrides the Special Act, and it would seem justly; for surely it is only fair to suppliers of water that applications to them to extend their mains into outlying districts should be the result of something like combined action, and also be accompanied by a guarantee of a commensurate return for the outlay incurred. These conditions appear to have been wanting in the case under consideration; but, as we understand the decision of the Court, they must exist prior to a demand being made for an extension of a water supply into an outside area.

THE GAS AND WATER STOCK MARKET.

(For Stock and Share List, see p. 469.)

THE Stock Exchange weather-glass is still at "settled fair." Good business is being done, especially in high-class investment securities; and prices steadily improve. There was a temporary setback last week in speculative quarters; but this did no harm. The general position and prospects all round are very favourable. The total volume of transactions in the Gas Market was lighter than what has ruled for the last few weeks; but this rate, of course, could not be expected to last for ever. The tendency, however, was still firmly in the upward direction; and several moderate advances in quotations were effected. In Gaslight and Coke issues, the ordinary was fairly active on the whole, with a quiet day now and then; and the price continued very steady. The extreme range at which transactions were marked was 95¼-96½. The secured issues were pretty brisk, especially the maximum; and both that stock and the preference advanced a point. South Metropolitan began fairly well; but very soon fell quite quiet. Prices were firm, ranging from 125½ to 126¼; and the quotation was put up half-a-point. There were more dealings than usual in Commercials, and at better figures; the 4 per cent. changing hands at top price. Business in the Suburban and Provincial group was at about its ordinary low pressure; and on the London Market there was no change in quotations. In their local Exchanges, however, Liverpool "A" and "B" and Sheffield "A" had a moderate rise. There was not much doing in the Continental Companies; but the tendency was good. Imperial continued its advance; and the best price of the week was 205 *ex div.* In the remoter undertakings, there was nothing to notice, except that in River Plate the shares again fell, and the debenture stock again rose. Business in the Water Companies was quiet again, but with a firm tendency, and one or two of the ordinary stocks made a slight advance. The chief feature was a further rise in some of the debenture stock issues.

The daily operations were: Business in Gas was only moderate on Monday; but prices were very good. River Plate debenture rose 2. In Water, West Middlesex improved 2. Tuesday was not more active, and quotations remained unchanged. Wednesday was the busiest day of the week. South Metropolitan rose ½; but River Plate fell ¼. Everything was very firm on Thursday. Imperial rose 2. In Water, the 4½ per cent. debenture stocks of Chelsea, East London, and West Middlesex rose 2 each. On Friday, business fell very quiet. Gaslight maximum and preference advanced 1 each. In Water, Chelsea advanced 1. Saturday was quiet and unchanged.

ELECTRIC LIGHTING MEMORANDA.

Conclusion of the Isle of Wight Nuisance Case—Electricity Supply and the Law of Nuisance—Electric Lighting by Slot Meters at Less than Cost Price—Criticism of Electricity-Supply Accounts.

THE end of the Isle of Wight nuisance case by the purchase of the plaintiff's lease by the defendant Company is one of those politic proceedings by which litigants serve their own interests and disappoint onlookers. In this case, it will be remembered, an electric light and power supply Company had undertaken to generate current by producer-gas power; their station being next door to a ladies' school. The gas-producers had no sooner begun to operate than the proprietor of the lease of the adjacent property complained of a nuisance arising from this use of the site; and she successfully sought an injunction. This order was held over for a time, to see if the nuisance complained of could be abated; part of the defence to the action being that the station had not been brought into proper working order. It appears, however, that the case was hopeless; and there was a motion on the paper to sequestrate the property of the Company for committing a breach of the injunction. Recognizing, therefore, that it was a matter of life or death for their undertaking, the Company submitted to the inevitable, and satisfied their adversary by buying her out. The record is one which should be commended to the particular notice of all prospective users of producer-gas plant under similar conditions. Though the Electric Light Company got out of their difficulty by the heroic procedure of purchase, which might not be feasible in all cases, they did not submit to this necessity of their situation until they had sufficiently tested the strength and reach of the arm of the law. Henceforward, whenever a power user is offered a private producer-gas plant as a cheap and easy method of supplying his wants in this respect, it will be incumbent upon him to first consider whether he is so circumstanced as to be able to make use of this means without fear of incidental legal proceedings for nuisance. The law in this regard is very wide, and the process by injunction very quick. The result of this Isle of Wight case will not tend to smooth the way for the general adoption of private producer-gas plants.

Apart altogether from the particular kind of nuisance created in this instance, undertakers of electricity supply may see in the case a clear indication of the practical meaning of the express enactment, which prevents those who engage in this business from pleading exemption from the law of nuisance. As we remarked at the time, the St. Pancras Borough Council had similar enlightenment in respect to causing annoyance by vibration which was proved against them. Parliament, in giving undertakers of electricity supply special powers for carrying on their business, did not allow them any prescriptive right to perpetrate a nuisance. When the St. Pancras Borough Council learnt that not even municipalization of the works warranted the operation of the plant in such a way as to injure and annoy the owners and occupiers of neighbouring property, they did not like it. Consequently, the Council decided to convene a conference of Local Authorities and Companies owning electricity undertakings in any part of the kingdom, with a view to organizing united action for obtaining statutory powers to purchase affected property, and repeal the provisions of the Electric Lighting Acts relating to nuisance. There is not the smallest prospect of the electric lighting interest obtaining this relief, in any such sweeping way. Our contemporary the "Electrician" contends that the trade had better support the new Government Electric Lighting Bill; the suggestion being that in this way the desire of the St. Pancras Borough Council may be gratified. We have already commented upon this Bill, and as we did not warn our readers that it contained any provision calculated to operate in this sense, it is desirable to refer to it again. As a matter of fact, the Bill does not say a word about the acquisition of any land compulsorily except "for the purpose of a generating station." There is no precedent for facilitating the compulsory purchase of land for the purpose of stopping a complaint of nuisance, or of compelling those who have such a complaint to make to submit their cause to arbitration. A question of the existence of a nuisance is one of fact, to be referred to the Courts to answer in the ordinary process of law. The amount of the damage may be left to a court of arbitration, by mutual consent; but Parliament will never give suppliers of electricity a prescriptive right to carry on their operations at their own sweet will. In the particular case of the St. Pancras vibration nuisance, it cost the Borough Council about £9000 to settle. The money was paid out of the electricity reserve fund, which is a store that not many municipal electricity undertakings have at command.

It is reported of the St. Pancras Borough Council that they have decided to put slot electricity meters into the new municipal workmen's dwellings, charging at the rate of 4d. per unit. This is a proceeding which calls for some notice on the part of gas companies, who have ample experience of the truth that slot-meter gas supply does not pay, unless a reasonable extra charge is made to cover the special expenses. Otherwise, the ordinary consumers have to contribute to the cost of extending the benefits of gas to a section of the population not necessarily more entitled to eleemosynary treatment than themselves. No Gas Company know this better than the Gaslight and Coke Company, who supply St. Pancras, and in all probability drew from this part of their district some of the painful experience that attended their earliest attempts to popularize gas by this agency. It is no part of the business of a gas or an electric lighting company to supply certain favoured customers at less than cost. Yet this is precisely what local authorities do on all sides, apparently without check or limitation. In this particular example—of offering electric lighting by slot meters to the petted occupiers of the municipal dwellings at 4d. per unit—the St. Pancras Borough Council propose to charge less than the average price obtained from the whole of the private consumption. It need not be a question of the actual cost of such supply, which might be a difficult matter to ascertain; but a slot-meter rate, for dwellers in the municipal workmen's houses, of less than the average price received, appears to require some justification, unless it is to be understood that the municipal housing of which we hear so much means the provision out of the rates of almshouses for able-bodied voters.

A weighty pronouncement on the judging of the accounts of electricity-supply undertakings is given in the electrical portion of the "Municipal Journal," for the 6th inst., to which we are glad to give additional publicity. It is pointed out that by the usual way in which such accounts are analyzed in the technical periodicals, the effect of the capital outlay upon the generating plant and the mains is not sufficiently shown. Station managers vie with one another in striving after "records," in which they are encouraged by the inconsiderate criticism to which these figures are subjected in some journals. The detailed analysis of central station accounts has been dropped out of the best electrical periodicals, for precisely the same reasons that have operated in time past to cause the publication of the particular accounts of all but a few representative gas undertakings to cease from the "JOURNAL." There is no room for all, even if it were worth while to reproduce all the details of the working of established concerns which must have most of their chief features in common. When any set of electric lighting books are to be dealt with critically, however, it is necessary to reckon the capital burden in with the works costs, if the object is to ascertain the actual price of the unit. Usually, the works costs, which are more or less the affair of the station engineer, are dissected with great particularity, to the second place of decimals of a penny in the unit. Then the gross profit is entered as a lump sum, to be wiped up by the capital charges, regarded as lying outside the running expenses. This practice probably descends from a condition of affairs when the original installation was the work of a consultant, who, having done his business and taken his fee, departed and left somebody else to

face the usual deficit. This is a practice that should have been outgrown long since, in the case of the older undertakings, in dealing with which the cost of carrying on the business as a whole is the really important consideration. It is, however, quite natural, that the resident engineer should try to keep his own work separate from the financial commitment, as to which he was not consulted.

THE BURDEN OF MUNICIPALITIES.

Municipal trading so often means municipal failure, that it is beginning to lose some of its glamour, even for those who have been among its most earnest advocates. The fact that in many instances it results in loss, and that in most cases the supposed remunerative undertakings contribute nothing to the reduction of the rates, is bringing some who have been enamoured of the idea of public control of all sorts of services to wonder whether the game is really worth the candle. Electric lighting as a practical business has done much to disillusion many who went into it with enthusiasm for the public service. The notion, which at one time greatly encouraged them, that the lighting of a town might be done for next to nothing by the combination of a refuse destructor and an electricity-generating plant, has long been exploded. Disappointment is not less surely in store for many of the local authorities who are seeking salvation for their electric lighting plant by tacking on to it an electric tramway undertaking. In many towns, large sums of money are being laid out on buildings and machinery with doubtful advantage to ratepayers.

The Worcester Corporation, after all the regrets attendant upon their disastrous water-power experiment, have been induced to set up a second electricity station near the city, only to find that the Tramway Company, for whose benefit it has been done, are not the profitable customers they were expected to be, and that the working results show a balance of loss. A similar scheme has received the sanction of the Corporation of Torquay, where, on the advent of an Electric Tramway Company, a new generating station is to be built and equipped at the expense of the town, in order that the municipal authorities may sell more electric current. The object of the Torquay Corporation, like that of the Municipality of the cathedral city, is to bolster up an electric light undertaking which has not been too conspicuously successful; but the probability in the one case, as in the other, is that the extra revenue will be more than swallowed up by the charges for the additional capital.

The remarkable thing is that in this, as in innumerable other instances, the ratepayers, if not their representatives, cannot see that such business is not worth having from any ordinary commercial standpoint. What it primarily means is, of course, that the ratepayers take upon themselves risks which should legitimately be borne by private capitalists. The supply of current for electric tramways is surely as much the concern of the tramway undertakers as the provision of horses was for the older method of traction. Why should the public money be laid out, and the indebtedness of local authorities increased, in one case more than another? The position is somewhat different when the municipality own the tramways as well as the electricity works. Even then there is nothing in experience to show that the ratepayers gained anything from the combination of lighting and traction plants. It may lead to a little confusion of the accounts, owing to the difficulty of apportioning working costs between the two branches of the concern; but this is not an advantage to those who pay the rates, and who look—usually in vain—to the municipal trading concerns to afford relief from their burdens.

REINFORCEMENT OF SOUND BY GAS.

In the large and varied collection of scientific appliances exhibited at the *conversazione* of the Royal Society at Burlington House on Friday, there were several which were of special interest to members of the gas profession. The Hon. C. A. Parsons showed an "Auxetophone," an ingenious instrument for use in gramophones or phonographs instead of the usual reproducing diaphragm. There are two jets—one of gas and the other a mixture of gas and air; and when these were lighted, a phonograph in connection with the instrument gave out very audibly the sound of the voice of an Italian operatic vocalist. When a speech was turned on, the flame made every gradation of the human voice discernible. Its application to a violin in the lecture-room afforded a very striking demonstration of its powers. A performance of the alphabet took place, with 26 different voices, each saying one letter; and the last being accompanied by a long-drawn bass note. Another exhibit, in which a gas-flame figured was that of Mr. T. C. Porter, to illustrate his method of mechanically reinforcing sounds. It was described as follows: "An ordinary phonograph with the reproducer is used as the source of the sounds. In this instrument the roughness of the record makes a rod vibrate, and these vibrations are communicated mechanically to a thin disc of glass or mica, which in turn transmits them to the air on the side of the disc remote from the rod. The aerial disturbances are then conducted by a tube usually to a trumpet; but in this experiment the reinforcement of the sounds is obtained by the combustion of coal gas and air. The mixed gases are led over the disc of the reproducer, and conveyed by tubing to two convergent jets and then ignited." The appliance was shown adapted to an Edison-Bell home phonograph. It may be convenient to mention here that among the other exhibits were a clever apparatus for determining the ignition-points of gases, shown by Professor Harold B. Dixon and Mr. G. W. A. Foster; and Mr. R. Threlfall's steam-gauge.

THE BRONDER RETORT-HOUSE MACHINERY AT TORONTO.

As the "Journal" was going to press last week, the mail brought some additional information on the working of the Bronder retort-house machinery—the triple scoop and rake charging and drawing machines and the bucket coal and coke conveyors—at the works of the Consumers' Gas Company of Toronto; the writer being Mr. W. H. Pearson, the General Manager and Secretary. The fresh notes were, however, too late to include in the descriptive article then being printed; and so we publish them now—prefacing them with a word of thanks to Mr. Pearson for giving his professional colleagues the benefit of his experience.

Our correspondent first alludes to the Bronder coke plant, as installed at Toronto, and described last week. He states that he and all concerned are well satisfied with the operation of the coke-conveyors, more especially as, by the system, the retort-house is kept practically free from steam and smoke, in the manner already illustrated. There is no need here to labour the unquestionable advantage of this exhaustion, and dispersion outside the house, of the steam arising from the coke-quenching operations, nor the comfort that it must be to the men. On both points, Mr. Pearson bears personal testimony. The system was completed in September, 1902, and has been in continual operation since then, excepting for about a month last autumn, when a fire at the works destroyed a considerable portion of the plant.

The figures referring to the Toronto plant published last week must apparently be assigned to the time when work was proceeding at Toronto on the twelve-hour shift, as, in the present communication, Mr. Pearson encloses a copy of the results obtained as recently as the 21st ult., with a statement of wages, which, he says, may be considered a fair average, and adds: "I may say that for some time past, owing to the eight-hour labour movement here, we have been obliged to have three shifts per diem." The figures will be of immense interest to engineers on this side for comparative use—not only as between the Bronder and home-made power machinery, but as between labour costs in Canada and this country.

Cost of Retort-House Wages, Consumers' Gas Company of Toronto, April 21.

Number of mouthpieces in use	168
Tons of coal carbonized per twenty-four hours	160

Number of men in retort-house per shift (three shifts per diem)—

4	floormen	at $2·00	..	$8·00
2	machine men	,, 2·25	..	4·50
1	pipe cleaner	,, 2·00	..	2·00
2	furnace and clinker men	,, 2·00	..	4·00
1	coke-conveyor man	,, 1·75	..	1·75
½	coal-conveyor man	,, 2·00	..	1·00
1	foreman	,, 2·50	..	2·50
11½	men	Total shift		$23·75

It is mentioned that these figures include all retort-house labour—taking coal into, and coke out of, the retort-house, the scurfing of retorts, cleaning and clinkering the fires, and keeping the pipes clear. With one additional man, 190 mouthpieces could be operated. Owing (Mr. Pearson remarks) to the twelve benches of eights (96 retorts) to which the figures refer being in a very bad condition, the results shown are poor; the make of gas being only 9140 cubic feet per ton of 2000 lbs.

In the March number of the "Physical Review," Mr. T. E. Doubt describes some experiments dealing with the effect of the intensity on the velocity of light. The results of these experiments justify the conclusion that for light travelling in air a change in intensity in the ratio of 1: 290,000 does not alter its velocity by so much as 57 centimetres per second. In the case of water, a change in intensity in the ratio of 1: 43,000 does not alter the velocity by as much as 80 centimetres per second—that is, by 1 part in 1000 million parts.

In a recent issue of the "Zeitschrift für amorganische Chemie," Professor B. Brauner describes the preparation and properties of acid sulphates of the rare earths. The cerium salt has the formula $Ce_2(SO_4)_3.3H_2SO_4$, and salts of the same type have also been obtained for lanthanum, praseodymium, neodymium, samarium, and yttrium. These acid sulphates are only incompletely converted into the normal salts at high temperatures; and the author's opinion is that all atomic weight determinations of the rare earth metals in which the sulphates obtained synthetically have been employed are inaccurate on this account.

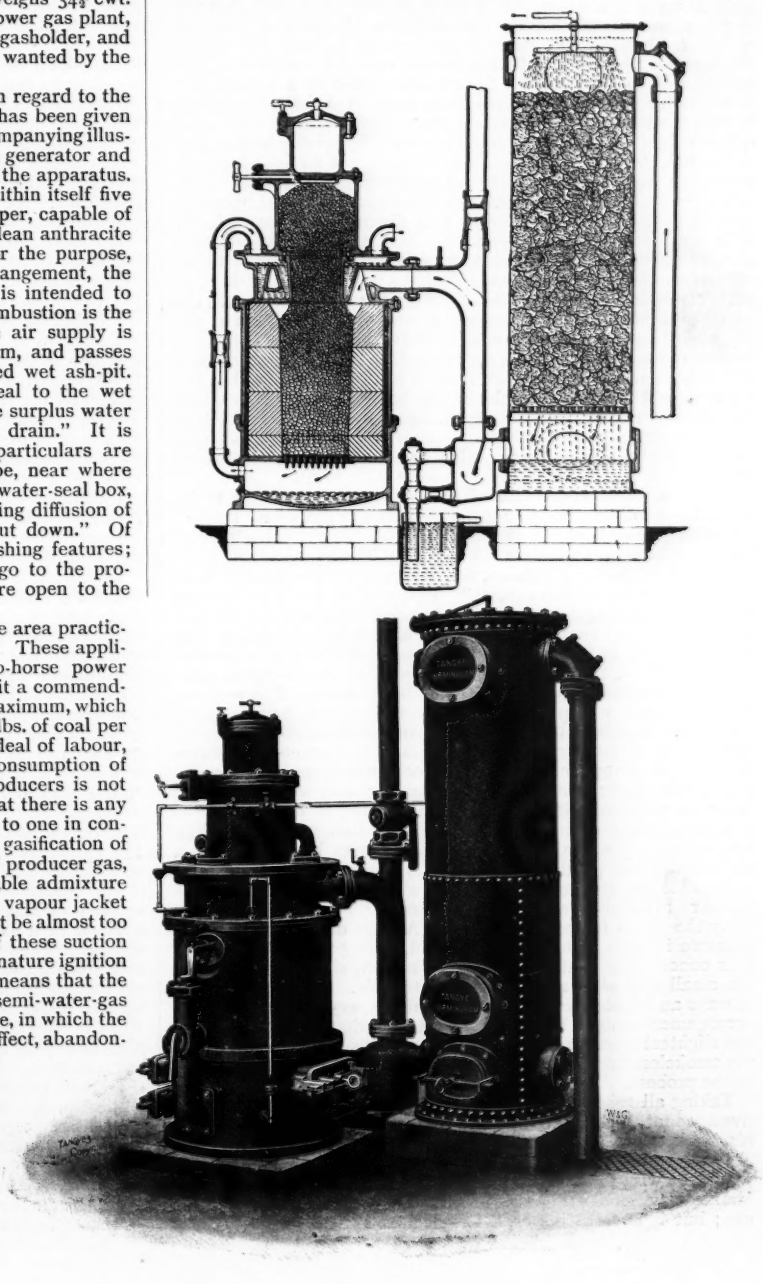
SOME REFLECTIONS ON "SUCTION" GAS-PRODUCERS.

At the exhibition of printing machinery and appliances just held at the Agricultural Hall, Islington, some of the leading makers of gas-engines, including Crossleys and Tangyes, successfully showed "suction" power-gas producers driving their motors. This is a sign of the times that is well worth the consideration of gas engineers, because printers are great users of gas power; and though in the middle of large towns there may be no inducement to experiment with suction or any other producer gas plant, yet there is a tendency to remove printing works into localities where the use of such plant would not be objectionable. Here many a possible customer for the local gas company may be lost, unless the manager is able to deal faithfully with the prospective suction-producer user. To be quite candid on the point, it must be admitted that the suction gas producer and engine, as put upon the market by the best makers, is a very taking-looking combination for users of small and medium powers. They are well-made, compact, and workmanlike articles; and whether or not they can, as claimed, be relied on always to produce 10 brake horse power for 1d. per hour, or 100 brake horse power for under 10d. per hour, it is necessary to recognize their merit. The basis for the cost of power in this case is a consumption of less than 0·9 lb. of anthracite "peas" per brake horse power per hour, with the coal costing 20s. per ton. This is for a gas-engine developing from 20 to 30 horse power; and the necessary gas plant complete, including generator, scrubber, and their connections, occupies no more than a floor space of 78 in. by 50 in., and weighs 34½ cwt. As compared with the older style of "pressure" power gas plant, the advantages are the absence of a steam-boiler, gasholder, and the fact of the gas only being made as and when wanted by the engine.

Gas engineers do not need further information in regard to the essential features of a suction gas-producer than has been given in the "Journal" from time to time; but the accompanying illustrations of the latest form of Tangyes pattern of the generator and scrubber may be used to explain the working of the apparatus. The producer is made of cast-iron, and contains within itself five vertical chambers. The top one is a charging hopper, capable of being covered down gas-tight, into which the very clean anthracite "peas," which are the only really suitable fuel for the purpose, are charged. By what is really a shot-pouch arrangement, the fresh charge is let down into the generator, which is intended to stand full, as shown. Just above the zone of combustion is the water-jacket, or vapour-chamber, into which the air supply is admitted through a bend, where it takes up steam, and passes downwards through an outside pipe to the closed wet ash-pit. The producer gas as made passes by a water-seal to the wet coke scrubber which is to clean and cool it; the surplus water running off through a seal into "any convenient drain." It is also stated in the catalogue from which these particulars are taken, that "the lower end of the connecting-pipe, near where it is fixed to the coke scrubber, forms a regulating water-seal box, and is brought into use for the purpose of preventing diffusion of the gases from the scrubber, when the plant is shut down." Of course, all makes of similar plant have distinguishing features; but they must possess the same elements which go to the production and cleansing of the gas, and are therefore open to the same criticism.

First, as regards consumption of fuel for the grate area practicable in respect of a gas-producer of this character. These appliances are listed up to a capacity of about 100-horse power indicated, which is the largest. The makers exhibit a commendable prudence in limiting their generators to this maximum, which corresponds to a gasification of from 80 lbs. to 100 lbs. of coal per hour. This means a large affair, entailing a good deal of labour, and developing much heat. The usual rate of consumption of fuel per square foot of grate surface in these producers is not reported. There is no reason to think, however, that there is any difficulty in burning it fast enough. What occurs to one in contemplating the elegant action proposed—the exact gasification of so much fuel as the engine requires in the form of producer gas, and no more, together with the proper and desirable admixture of steam automatically generated by means of the vapour jacket and the wet ash-pan—is that a perfect balance must be almost too good to expect. It is reported of the working of these suction combinations, that the engines are less liable to premature ignition than in the case of "pressure" gas plants. This means that the gas itself is poorer in hydrogen than the ordinary semi-water-gas produced by generators of the Dowson or Mond type, in which the gasification of steam is considerable. They are, in effect, abandonments of the type of gas in question, and a return to the poor type of gas resulting from Siemens producers and blast-furnaces. Let this fact—for such it appears to be—be recognized for what it is, and what it entails as regards the engine. It means a special engine, differing from such an engine as will work satisfactorily with ordinary coal gas, or possibly even with Dowson gas. They require the following characteristics, according to the makers' specification: High compression, adjustable magneto-ignition, quick air and gas regulation, and large gas valves and passages, "all of which are of the utmost importance when using producer gas." Therefore, while gas-engines specially bought for working with a suction plant may be converted to work with town-gas without any alteration at all, the ordinary gas-engine will not work satisfactorily with producer gas made by suction. This is something for the power user to know.

Fortunately, the substitution is in the right direction for the gas industry, which may therefore regard every suction power-gas plant installed as a possible eventual consumer, if situated within its reach. And where there does not happen to be any coal gas to fall back upon, it is difficult to concede to the suction type of plant any noteworthy economical advantage over the pressure type of semi-water-gas plants, with the merits and demerits of which power users are familiar. Its successful working depends on the supply of the only suitable kind of fuel—anthracite "peas." There are degrees of suitability, even in fuel of this class; for we find some makers of the plant claiming credit for the ample dimensions of their coke scrubbers, which they state to be "a very important factor if inferior 'anthracite peas' be used." Now, this suggestion evokes a vista of trouble which widens as one follows it up. If the scrubber may go wrong with unsatisfactory fuel, what of the generator? There is no reserve of producing power, no store of gas—not even for the moment required for stirring up the fuel, if this should be necessary. Every vicissitude of the gas making is carried on to the engine, immediately



and inevitably. The attendance must be regular and reliable. Besides, there is no gasholder to give warning, by its position, of the state of the gas production. It seems impossible to escape the conclusion that, whether the production be on the suction or pressure system, a good attendant is required to look after the plant; and his wages will usually make up the difference between the running expenses of such a plant and the cost of ordinary gas, available by the turning of a cock.

It would seem that the claim for compactness advanced for suction gas-power plant is subject to a set-off as already particularized, and is not positive. That is to say, this type of plant does not really produce more power from the fuel gasified, nor even per unit of ground space occupied by the generator, than the older pressure plant. Its compactness is a matter of dispensing with things which are useful in their way, not of superseding them. The net efficiency of the process is no higher; but the same result, or thereabouts, is obtained by different means. The choice between these alternatives is governed by considerations of expediency. If there is a gain in one respect, there is a loss in another. To say that a suction power-gas plant can be used where a pressure-gas plant would be unsuitable, may merely mean that the case is not one for locally-made producer gas at all. The mere consideration of ground space can rarely be of supreme moment either way.

The most important consideration that governs the decision of a power user in any populous place, on the question of whether he shall use a producer plant or buy a pure supply of gas from the street mains, is that of nuisance. Broadly speaking, the statutory gas company are the only people entitled to make gas in a district of a sanitary authority without incurring the risk of a prosecution for nuisance by so doing. There is no ground for proceedings against the gas company for a constructive nuisance for making gas, because this is their proper business. Nobody else can use the same plea. In the case of *Knight v. The Isle of Wight Electric Light and Power Company, Limited*, the defendants were injuncted, and cast in damages, for working a gas-producer generating station to the annoyance of a neighbour; and ulterior proceedings were only stopped by the Company buying the lease of the aggrieved party, which was an avoidance rather than a settlement of the difficulty. If anybody undertakes to manufacture gas upon his own premises, not having statutory powers or imperative necessity for so doing, he incurs risk of an action for damages for creating and diffusing noxious and offensive odours, to say nothing of noises and disturbing flares of light. It is no defence to such an action that the best means and materials available for the purpose of manufacturing gas without offence are employed. Defendants have no business to do it at all. The best anthracite coals in the market contain sulphur, the whole of which must eventually get into the atmosphere of the neighbourhood where such coal is converted into producer gas for use in an engine. True, such gas can be passed through a scrubber; and gas managers will smile at the suggestion that the waste scrubbing water should be discharged into a convenient drain. If a public sewer is meant, the authorities are likely to have something to say on this proposal. Those who discharge into the public sewers water which has been in contact with an inflammable and poisonous gas, do so at their peril.

There is, besides, the risk of carbonic oxide poisoning to be faced by those who manufacture producer gas elsewhere than in the open air, with plenty of circulation of the air. One firm of makers of suction apparatus state, among its alleged advantages, that it "may be fixed indoors, as there is no more danger from fire than with an ordinary stove." This may be true; but danger from gas poisoning is more to be dreaded than any risk of fire. Those who make such assertions, calculated as they are to mislead people who know no better, incur a grave responsibility. Consider the danger of entering a closed producer-house, after the plant has been shut down for the dinner hour. The working of the generator requires a cock on the only substitute for a chimney. Accidental omission to open this cock before leaving the plant in a hurry, might have the most serious consequences. At any time, stoppage of the engine necessitates the instant opening of this cock; and the works manager who would willingly incur the responsibility for all this manipulation, for the sake of a problematical saving of a small weekly sum, would be oddly constituted. Besides, though the plant works by suction, for a not unimportant portion of its life, it is a pressure plant in so far as it is blown into working order by a pressure-fan, and the gas pressure must always be outward when the engine is not taking away the gas as fast as it comes off. At shut-down times, the gas pressure is from within outward; and during very cold weather it is conceivable that back-pressure might exist with respect to the small vent-pipe, and thus cause trouble. Thus in a variety of ways an interior containing one of these very innocent-looking arrangements might be converted into a lethal chamber without the slightest warning. The catalogue states that the appliance "is smokeless and free from smell." That is the insidious nature of the process.

Taking all these various and sundry things into the comparative account, it therefore appears that a gas manager who knows his book ought not to experience any insuperable difficulty in showing cause why users of gas power within touch of his mains would be wise to leave the manufacture of the gas to him. His charge may appear to be higher than the prime cost of producer gas; but it is for a better, safer, cleaner, and more trustworthy article. It includes protection against prosecutions and litigation; and the works manager who pays it has none of the worries that must certainly environ the users of a producer plant. And if his arguments fail, and the possible consumer falls a victim to the attraction of anthracite "peas"—well, if the gas manager has patience, and a suitable meter ready, he may yet hope that his aid will be summoned in a hurry when trade is brisk, and the gas-producer chooses that particular time to burn out or misbehave itself after its manner. Did anybody ever buy a second-hand gas-producer? There are no such things. For them the descent from the show-stand to the scrap-heap is but a step—and a step which is often all too quickly taken.

A GAS ENGINEER OF THE PAST.

Reminiscences of a Unique Experience.

THE paragraph given in last week's "JOURNAL," recording the completion of Mr. Charles Meiklejohn's health-rehabilitating trip abroad, has touched the reminiscent vein in Mr. Robert Dempster, of Penmaenmawr; and he has forwarded an interesting episode in the professional career of Mr. Meiklejohn's father, which shows a dogged perseverance under very perverse circumstances, such as no gas manager could possibly meet with in these latter days. We will let Mr. Dempster tell the story just as he has written it. He says—

I was somewhat interested in your narrative of Mr. Meiklejohn's travels in to-day's "JOURNAL;" and it brought to my mind things that happened long ago concerning Mr. Meiklejohn's father, who underwent an experience in the management of gas-works which I think is without parallel.

Mr. Meiklejohn, sen., had been gas manager in several gas-works in Ireland, and became very anxious to have a gas managership in England. Observing an advertisement for a Manager for the Houghton-le-Spring Gas-Works, he applied and got it; but I shall never forget the description of his dismay when he entered those gas-works gates. A retort-house without any roof; scarce a retort that could make gas; condensers, purifiers, and gasholder dropping to pieces, and patched in every direction; the town in darkness, no gas having been made in the works for some time. As far as my memory goes (for this is many years ago), he described the history to me as follows.

The works evidently belonged to a Company at one time, but had been so badly managed that not only the shareholders, but the Directors had silently abandoned both their claim and attention to the works, leaving the then Manager to carry on, and pay and draw all accounts, by himself. Then the Manager died; and once more the works were closed. The Earl of Durham—who owned the colliery close to the works (only a wall dividing them), and had been supplying the works with coal, while the colliery took a large quantity of gas both for top and bottom lighting—entered into possession of the works in a kind of way, sending a man in to make the gas chiefly for the supply of the colliery, the colliery officials, and a few others. This man appears to have had a great propensity for horse and dog racing; and the retort-house was used largely as a drinking and betting club. This man also drew all and paid all. Then he died; and again total darkness. Such was the state of matters upon the entry of Mr. Meiklejohn's father to Houghton-le-Spring Gas-Works.

To return to old Erin was first thought of. But Mr. Meiklejohn's wife and family were with him; and his dislike to Ireland made him think and scheme. He concluded to stay. He had no Directors. There was the party who owned the land, and, of course, the gas-works, and who had advertised, but who would not advance a single penny to renovate the gas-works. In Mr. Meiklejohn's despondency, he called me in, and asked if I had sufficient confidence in him to erect a bench or two of retorts, and that he would pay for the work by instalments. I agreed to do so; and he kept his word. Then condensers, exhausters, scrubbers, and gasholders followed on the same footing, no one finding him any money. After this, he relaid the whole of the street mains, and obtained an Act of Parliament. But by this time the old Directors put in an appearance, and took possession. The Directors showed their "appreciation" for all this great work by granting him only £200 worth of the Company's shares.

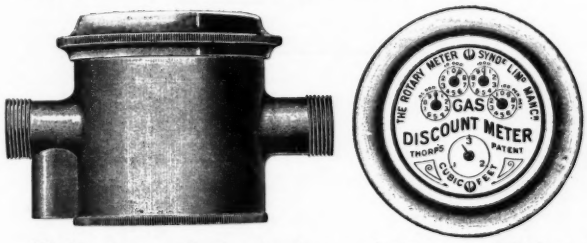
For several years after he started this work, the immense amount of leakage troubled Mr. Meiklejohn; but this he discovered in a singular way. A pump exhauster was fixed upon the top of the colliery bank, and within sight of Mr. Meiklejohn. From the gas-works, he calculated the number of strokes per minute, and found it was delivering more gas than was registered by the meter at the bottom. He asked permission to be let down the shaft slowly; and on the way, he found a 3-inch branch pipe supplying the workings about half-way down the shaft, without a meter.

I could go on much longer giving details of the many difficulties he had to overcome; but enough. He was a downright honest persevering gentleman, and had only to be known to be respected. It has often occurred to me to give you the above outline; but having to bring myself into prominence in the narrative, I have always put it off. This part of the history of the late Mr. Meiklejohn is unique in itself; and it may help as an incentive to some of our younger brethren.

DEVELOPMENT OF THE "ROTARY" METER.

A Discount Meter for Gas for Heating Purposes.

It will be remembered that, at the Southampton meeting of the Gas Institute, Mr. T. G. Marsh, of Manchester, introduced to the members, in a paper, an innovation in gas measurement patented by Mr. Thorp. The principle of his new meter was fully explained; and, as is well known, to it and to the many sizes of meters that have since sprung from the first creation, the inventor has given the name of the "Rotary." Without hesitation, when Mr. Marsh brought forward the meter, two things were recognized—first, the ingenuity that had conceived so simple a piece of registering mechanism, and, secondly, that there was undoubtedly before it a large and expanding field of usefulness. It was remarked in the "Journal" at the time that, with the reading of Mr. Marsh's paper, the last had not been heard of the meter, and that "it had come to stay." The short period that has elapsed has yielded an abundant justification of this little prophecy. Mr. Marsh in his paper suggested the suitability of the new recorder for use as a station meter in gas-works, or for power gas, or, in fact, for employment in any position in which the measurement of gas passing in bulk was required. That was then his opinion as to its prospective value and serviceableness; now when he is bringing forward his newest development of the meter, he is able to point out, with some gratification, that his first opinion has been changed into fact positive by the many numerous applications that have since been made of the system. There are now a considerable number of "Rotary" station meters of all sizes in use for measuring water gas and coal gas; and those who have them speak highly of their action. In fact, the meters have (Mr. Marsh informs us) given every satisfaction, as any gas engineer can learn for himself. The sizes that have been made range from capacities of 100,000 cubic feet per hour down to 2000 cubic feet. The satisfaction has penetrated beyond the coal and water gas industry. For, it is learned that, after tests made by an Engineer for the Power Gas Corporation, and after further tests by the Consulting Engineer of the South Staffordshire Power Gas Company, in the presence of representatives of the Standards Department, the Corporation named negotiated for, and secured from the Rotary Meter Syndicate, the sole licence for the manufacture of these meters for use in connection with Mond gas. Two of the meters are now being built to pass 500,000 cubic feet of power gas per hour each. The size of the rotary meter is such as to enable it to be applied in connection with engines and furnaces when an ordinary gas-meter would be altogether out of the question.



All this shows a pleasing development of the meter, which was so well received at Southampton, and at once took the fancy of many gas engineers. Mr. Marsh then foreshadowed investigations and experiments to ascertain how far the meter could be usefully applied in many other directions. Satisfaction has been realized in developing the meter in the upward direction; and attention has now been bestowed upon the production of a very small meter of a kind suitable for enabling gas to be supplied for fires, cookers, and other heating appliances for domestic, industrial, and laboratory use at a rebate price. It was one of Mr. Marsh's strong convictions early in the long period that he has been associated with the gas industry, that there was magnificent scope for gas suppliers in the sale of gas for other than lighting purposes. His view, too, coincides with that of many others who have watched events in the industry, that the electric light deserves no small amount of thanks for having displaced apathy by enthusiastic endeavour in the sale of gas. But there is, he feels, much potentiality left for producing expansion; and he is setting to work upon it. Readers need only have it mentioned to remember that Mr. Marsh did a not inconsiderable amount of pioneer work in connection with the prepayment gas-meter; and having seen the inestimable advantage that that system has been in getting hold of a previously sleeping class of business, he has felt that some method is now required that will enable gas suppliers to cultivate more largely than they have hitherto done the heating business. In this, he sees the possibility of a large and valuable increase in consumption. The cost of gas in connection with gas-fires is a very different matter from its cost in connection with cooking. In the case of gas-fires, the gas is in use constantly during the cold days; while in the case of cookers, it is only used intermittently. A gas-fire, therefore, burning anything between 25 and 40 cubic feet of gas an hour builds up a liability that comparatively few people care to have anything to do with at the ordinary price of gas; but a great many more might be willing to incur the expense, to obtain and enjoy the conveniences, if encouraged to do so by a rebate for such use from the price of the ordinary supply. This is what Mr. Marsh is now proposing—the allowance of a discount from the ordinary price for all gas used in gas-fires. But a differential price in every household or business house would involve considerable capital expenditure. There is the first cost of a separate meter; and one of an ordinary type would cost (say) from £3 to £4. In addition a separate set of pipes through the house would be needed, where there was more than one gas-fire in use; and besides the putting in of a separate system would cause a heavy outlay for labour.

These are the difficulties to a differential price for heating that Mr. Marsh has set himself to overcome; and the "Rotary" meter has enabled him to do it. On somewhat similar lines, he has produced a small cylindrical meter—truly not larger than a breakfast cup—to which he has given the name of the "Discount" meter. The mechanism of this little thing is a modification of that in the "Rotary" station meter. The face of the index, which is glass covered, has five dials—one a test-dial (showing 3 cubic feet consumption), and four others as in the case of an ordinary five-light meter. Now this simple arrangement can be fixed on the service-pipe to any gas-fire or heating appliance. It is insignificant in size, and can be enamelled in any colour required to harmonize with the decoration of the rooms, so it would not by any means be an eyesore in any position. Now this meter Mr. Marsh is introducing at a very moderate price—it is understood at 15s. Its use, therefore, in encouraging the consumption of gas for heating through a reduced price will not cause any great capital outlay, nor are the several other difficulties attached to it that have presented themselves in the past under the ordinary system of supply. In writing about it, one almost gets a touch of the enthusiasm with which its author explains his invention as being a means to a profitable end.

Just a few words as to the mode of using the "Discount" meter. As already stated, one would be fixed to the service-pipe of each fire or other heating appliance. The whole of the gas consumed on the premises would be measured through the ordinary meter. When the state of that meter is taken by the inspector, he will also book the registrations of the "Discount" meters; and the discount allowed per 1000 cubic feet on the amount of gas shown to have been consumed for heating would be deducted from the total as registered by the ordinary meter. For example, supposing the ordinary price of gas is 2s. 6d. per 1000 cubic feet, and a discount of 6d. is allowed on all gas used for heating. The ordinary meter shows a consumption of (say) 40,000 cubic feet; and the discount meters, 10,000 cubic feet. 40,000 cubic feet at 2s. 6d. per 1000 = £5; discount on 10,000 cubic feet at 6d. per 1000 cubic feet = 5s. So that the amount of the gas bill would be £4 15s. It is the opinion of Mr. Marsh that a small reduction on the total consumption of gas will not appeal to a consumer so much as a good discount—such as 6d.—on the gas used for some special purpose. The advantages of heating by gas are well known to "Journal" readers; and combining these in a notice of a substantial discount to consumers should give a good fillip to this branch of business. Mr. Marsh is certain that he has hit upon a good thing; and gas managers can easily put his opinion to the test by procuring a sample meter. If they are satisfied by the test, there is no doubt the "Discount" meter will soon be in large request.

PERSONAL.

Mr. A. F. Goodson has resigned his position as Manager and Secretary of the Heckmondwike Gas Company.

Mr. W. J. R. Baker, of Bolton, has been appointed Gas Manager and Electrical Engineer, and Mr. W. C. Thorpe, of Ripon, Surveyor and Water-Works Engineer, to the Malvern District Council.

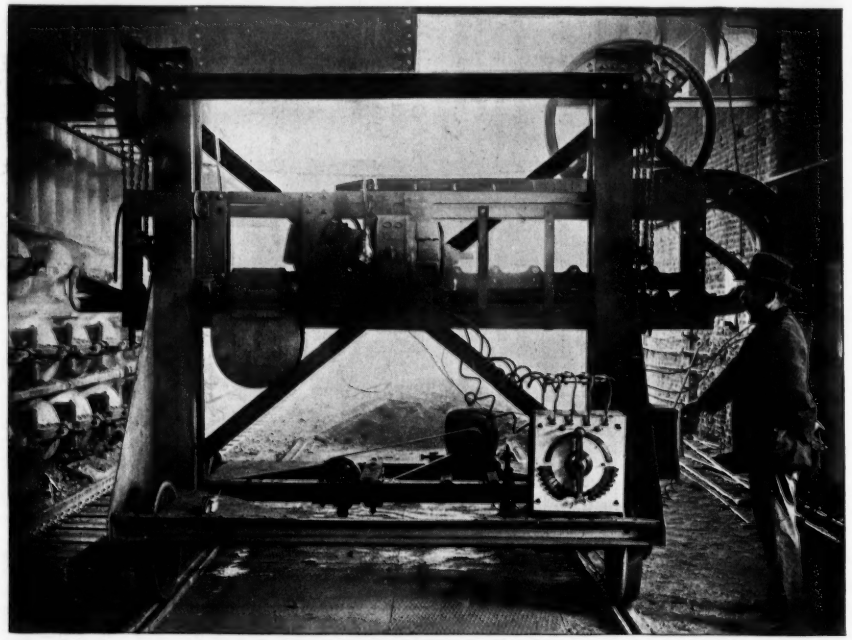
Mr. William Davies, the Resident Superintendent of the Liverpool Corporation Water-Works, has retired after a service of 45 years with the Water Committee, during the last 14 of which he has been in charge of the Vyrnwy Aqueduct and works between the lake and Prescott.

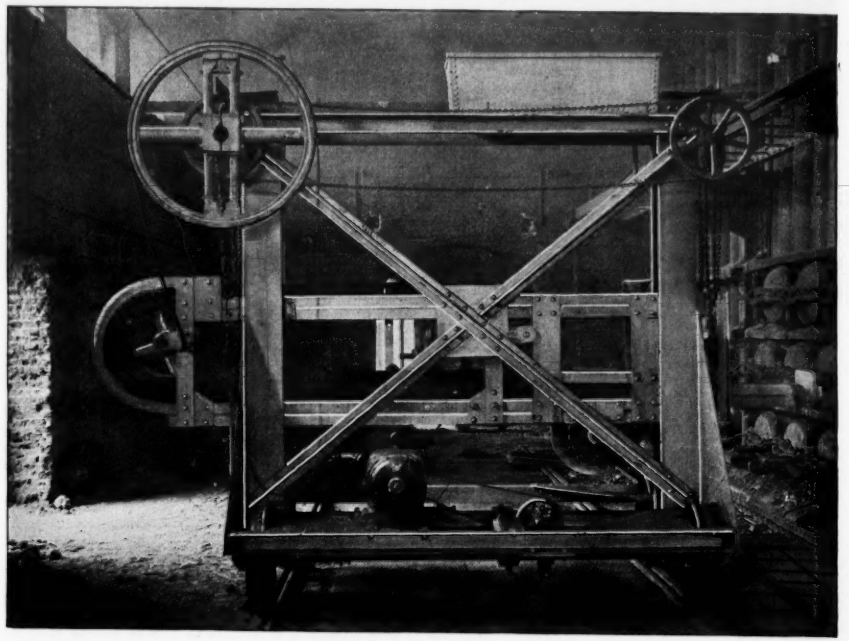
Mr. Douglas Cooke has been appointed General Assistant to Mr. Vincent Hughes, the Engineer of the Smethwick Gas-Works. Mr. Cooke (who is the son of Mr. A. Cooke, of Oldbury) at present occupies the position of Assistant and Chemist under Mr. Henry Peaty, at Burslem.

By an article which appears elsewhere, it will be seen that Mr. W. Littlewood has sent in his resignation as Engineer and Manager of the Tiverton Corporation Gas-Works—a position he has held for nine years. Before going to Tiverton, Mr. Littlewood was at West Bromwich.

The funeral of Dr. A. W. Williamson, whose death was recorded in the "Journal" last week, took place at Brookwood Cemetery on Friday. Among the colleagues of the deceased who followed him to his last resting place were Dr. H. Divers, Sir Henry Roscoe, and Dr. T. E. Thorpe, representing the Royal Society (Dr. Divers also representing the Society of Chemical Industry); Sir William Ramsay, Professor Clowes, Professor J. D. Cormack, Professor Henrici, Professor Odling, Professor W. A. Tilden (President), and Dr. A. Scott (Treasurer) of the Chemical Society; and Dr. Voelcker, Consulting Chemist to the Royal Agricultural Society of England.

THE DE BROUWER PATENT "PUSHER" FOR DISCHARGING GAS-RETORTS.





The publication last week of the specification of patent No. 14,089 of 1903, enables a description to be given of the arrangement that M. De Brouwer has devised for discharging coke from through retorts, and intended for use with the "D.B." projector with which his name is identified.

The claims made for the apparatus about to be described are: "1. An appliance for pushing coke from through retorts, consisting of a rigid toothed rod or bar, having a pushing head, a chain of toothed links forming a jointed flexible rack pivoted to the rod or bar, means for guiding the same in a frame, means for coiling or winding up the jointed rack, and means for operating or driving the pusher—all in combination. 2. The construction of the pusher as shown and described, and especially the provision of means therein for holding water for the purpose of keeping the parts cool during working."

The pusher is mounted (as shown) in a frame adjustably suspended in a carriage arranged to run on the floor of the retort-house (or on an overhead railway, extending along the front of the retorts at any desirable distance from their ends), and is provided with vertical guides, between which the pusher and its frame can be raised or lowered according to requirements.

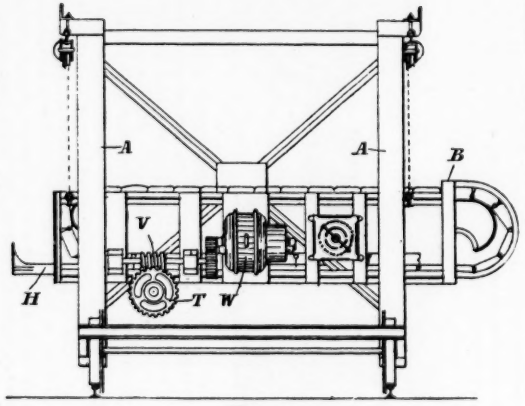


Fig. 1.

The pusher consists of a rigid rod, of comparatively short length, provided with a plate at the end to act as a pushing plate; while the other end of the rod is connected with a series of links, which form a rearward continuation of the rigid rod or pusher. The links, as well as the rigid rod, are formed each with a recess on the top, to contain water; and on the under side the rigid rod and the links have teeth, and virtually form a jointed rack. The links are wound over pulleys or guides, in the frame, or else round a disc-carrier, the axle of which is mounted in guides or bearings in the pusher-frame.

To project or withdraw the pusher, a toothed wheel, gearing with the jointed rack, is driven through a worm wheel on its shaft by a worm on a shaft parallel with the frame; the worm

Fig. 2.

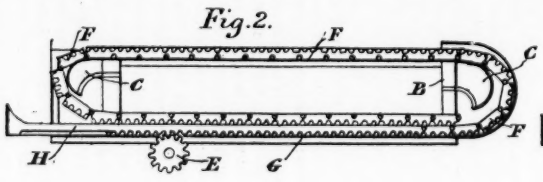
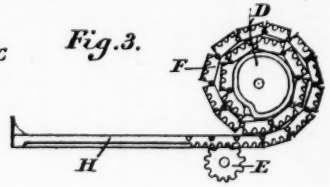


Fig. 3.



shaft being actuated by gearing from a prime mover of any suitable form (preferably electric, the patentee remarks) or by any other source of power.

As a modification, the worm shaft can be provided with friction clutch mechanism, by which the proper belt and pulley to project or withdraw the pusher is brought into operation (as and when required) by a suitable lever, or a reversing electric or other motor can be made use of. The gearing can also be arranged to drive from the motor shaft by means of a train of spur pinions and wheels and flexible chain to the axle of the rack pinion mentioned above.

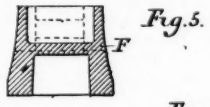


Fig. 5.

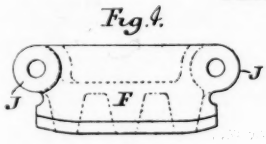


Fig. 4.

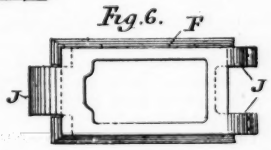


Fig. 6.

Fig. 1 shows in side elevation the complete apparatus. Fig. 2 is a side view of the pusher in its frame detached. Fig. 3 is a similar view of the pusher, with a different form of mounting. Fig. 4 is a side view (on an enlarged scale) of a link of the jointed rack. Fig. 5 is a cross section. Fig. 6 is a plan.

The carriage A is adapted to run on rails on the ground, as shown, so as to form an overhead railway. In the carriage is suspended, in any convenient manner (but preferably counterweighted), a frame B carrying the pusher mechanism. This consists of a rigid toothed rod or bar H, which slides in guides G in the frame, and having at its outer end a pushing-plate. At the other end, the bar is pivoted to a chain of links F of special construction, as will be described later on.

To economize space, these links are coiled up in some convenient manner in the frame B—thus they may be passed round rollers, pulleys, or fixed curved guides C placed at opposite ends of the frame B (as seen in fig. 2), or they may be wound on a disc carrier or drum D (as in fig. 3).

Movement is communicated to the jointed pusher H F by means of the toothed wheel or pinion E, which may be driven in any convenient manner. One arrangement for working the pusher is indicated at fig. 1—that is to say, W is an electric motor carried by the frame B, which motor, through suitable gearing, operates a worm shaft V, which drives a worm wheel T on the axle of the wheel E. In this case, the direction of motion may be changed by reversing the current.

Each link of the pusher consists of a casting or piece, having a pierced lug or lugs J at each end, a recess or trough on the top side to hold water, and teeth on the underside which gear with the teeth of the pinion E. There may also be side guides to ensure the entrance of the teeth of the driving pinion E.

The photographs show the pusher as it is at present being worked at the Bruges Gas-Works.

British Association of Water-Works Engineers.—We have received from the Secretary of the Association (Mr. Percy Griffith, M.Inst.C.E.) the "Transactions" for the past year. The volume contains the report of the proceedings at the eighth annual general meeting, held at Bolton in July and in London in December, under the presidency of Mr. R. H. Swindlehurst. The papers, which have already been dealt with in the "JOURNAL," are fully illustrated; and they furnish, with the discussions to which they gave rise, a large quantity of valuable technical matter. A useful feature of the book, which has been produced under the editorship of Mr. Percy Griffith, is a subject-matter index to its contents and those of its seven predecessors. It is published by Messrs. Biggs and Co., Salisbury Court, E.C.

Absorption of Light by Coloured Flames.—One of the interesting "Notes on Contemporary Electrical Science" recently furnished by Mr. E. E. Fournier d'Albe to the "Electrician" was on the above subject. According to Kirchhoff's law, the ratio between the emission of a flame to its absorption for a certain wave-length is a function of the temperature alone, and equals the emission of the absolutely black body at the same temperature and wave-length. J. Stscheglayew has tested whether this rule applies to flames coloured with metallic vapours, and has found that they do not obey the law. He used a burner in which the illuminating gas was mixed before combustion with air saturated with the spray of a solution of a metallic salt, such as lithium chloride. In this way coloured flames of a constant intensity are obtained. The author found that the logarithm of the ratio of emission to absorption is a linear function of the reciprocal of the absolute temperature, but the slope of the line is much steeper than is warranted by Kirchhoff's law; the Wien constant being 23,000 instead of 14,550. The ratio of emission to absorption therefore increases much more rapidly with the temperature than does the radiation of the absolutely black body.

A STUDY OF SOME AMERICAN GAS-WORKS.

By A. J. WALKER, of Leith.

[SECOND ARTICLE.]

As far as one could judge from appearance, the retort-settings and furnaces for the production of coal gas in American works are not in advance of those which may be seen in most modern works in this country. The retorts are generally 8 to 10 feet long, and six to an oven, placed in two vertical tiers; but in the new works at Milwaukee, they are longer and very spacious in section, and there are eight to each oven. In another works which I saw, the retorts were of Ω section; but they had circular mouthpieces and lids. The Engineer explained that these mouthpieces and lids could easily be faced-up on an ordinary lathe, and that the bottoms of the mouthpieces—which, of course, projected considerably below the level of the sills of the retorts—were not liable to be worn by the action of the rakes used in drawing.

Bronder's charging and drawing machines, which have already been described in the "JOURNAL," are the only kind that I saw in use; but an engineer whom I met purposed having horizontal through retorts, with machines at one side of the bench and a coke-conveyor at other side. The machines, he said, would be arranged to charge the retorts, and also to push the coke, at the proper time, right through them on to the conveyor at the other side of the bench. This arrangement would only require one machine in place of two; and the machine, with the men working it, would not be exposed to the steam and mess arising from the quenching of the coke.

The make of gas per ton of coal I heard variously stated at from 10,500 to 11,000 cubic feet; and the illuminating power of the mixed gas supplied to the public, at from 20-candle power in some cities to 24 candles in others. In most of the cities the gas supplied to the consumers is very strictly tested for illuminating power, &c., by the municipal authorities.

Condensation seems to be generally effected by the aid of water—the gas passing in comparatively small tubes through large chambers containing water, or, in some cases, flowing through similar large chambers traversed by water tubes. The apparatus required for the former method is more easily kept clean than that required for the latter. Condensers, scrubbers, washers, and other like plant are almost invariably placed in buildings—on account, I suppose, of the wide range of temperature; and for the same reason probably large atmospheric condensers are but seldom seen.

Artificial oxide of iron is extensively used in the United States for the purification of coal and carburetted water gas; and its manufacture seems to form quite an important department in many gas-works. For the preparation of this oxide, large quantities of pine wood chips or shavings are brought into the gas-works in compressed bales. These bales are opened, and the shavings mixed with iron rust, turnings, borings, &c., of iron, are spread out on the ground in layers about 18 inches deep, and kept constantly moistened. In some cases, there is a system of overhead sprinkling pipes to effect this. The wood chips or shavings thus absorb oxide of iron; and they are afterwards used in the purifiers in the ordinary manner. In many works a large extent of yard space is occupied by heaps of this artificial oxide in various stages of manufacture. Oxide is frequently revivified without being removed from the purifiers; steam injectors or fans being employed to supply air for the purpose. It is not generally considered necessary in the United States to remove the carbonic acid from the gas, so lime is seldom used in the process of purification, and the gas is simply enriched a little more to counteract the effect of the carbonic acid on its illuminating power.

The purifier-boxes in the more modern works are generally about 8 feet deep; the gas being admitted through a single inlet about the centre of the height of each box, and taken off at two outlets—one at the top, the other at the bottom of each box. This arrangement is said to practically double the effective area of the boxes without increasing the resistance of the purifying material to the flow of the gas. The old form of revolving dry centre valve, still common in this country, seems to have been completely discarded in the United States; but I did not see any purifiers there having dry lute covers similar to those now being introduced in some works in England. Purifier grids are mostly made of oval sectioned slips of wood passed through holes of like shape in flat bars of iron. If one of these slips should happen to break, it can easily be drawn out and replaced by a new one without discarding the whole grid. These grids are stronger, too, than those generally used in this country, as there are no bolt holes in the wood. Ordinary platform elevators are commonly used for raising the materials required for purification.

In some, at least, of the Canadian works lime is used either alone or along with oxide. This is probably necessary because of the large percentage of sulphur contained in the coals used there. In one small works, I noticed lime was being used mixed with sawdust.

The exhausters in some of the older works are of the Root blower description; but Sturtevant fans are, of course, commonly used for various purposes. In the works on Long Island, New York, one is employed for pushing the gas through a 36-inch pipe passing under the river in a tunnel to supply Manhattan.

None of the station meters which I saw in the gas-works in the United States were built after the model of the mausoleum at Halikarnassus, or other classic edifice, as is usually the case in this country. They were invariably constructed with quite simple cylindrical cast-iron cases, which look very well when nicely painted; but in one well-known works in Baltimore this beautiful simplicity was spoiled by scrolls of cast-iron acanthus leaves and a considerable amount of unnecessary gilding. The index, with its nicely-finished and nickel plated train of wheels, was generally the only conspicuous ornament.

In the Point Breeze Gas-Works, Philadelphia, there is a fine valve-house containing about twenty 36-inch valves, the spindles of which can be raised or lowered in a few seconds by means of hydraulic rams—one ram being attached to each valve for this purpose. With hand power alone, it would take a considerable time to open or shut one of these valves; and in the summer time, in Philadelphia, the attendant would probably be quite too hot after completing the operation in this way.

There is nothing to call for special remark in the construction of any of the gasholders which I saw, except the fact that they had generally steel tanks above ground, and not brick or concrete underground tanks. The lute of the upper lift of one holder in New York, I observed, had an india-rubber cover fitting closely all round, to facilitate heating by steam in the winter season. In Canada, the gasholders are mostly under cover, on account of the intense frost experienced there; and for the same reason Canadian gas engineers have to take special precautions in connection with other outdoor plant. Even in the retort-houses water-pipes situated only a few yards from the benches will sometimes freeze.

I did not notice any plant in gas-works for the working up of residual products; but I observed that in some works, situated at a considerable distance from the chemical works where this is done, the ammoniacal liquor produced was concentrated before being sent away in the tank-waggons. The plant required for carrying out this operation is not complex; and a considerable saving in the cost of transport must be effected where it is in operation.

In Manhattan, there is a very old works belonging to the Consolidated Gas Company, where gas was originally manufactured from whale oil, and afterwards from resin and wood, and where oil is now used again, but only for enriching water gas. Here I noticed that the coal was lifted out of vessels in the river by means of a crane and grabs, and that it was conveyed to the works, which are situated a considerable distance from the quay, on an underground india-rubber band conveyor, similar to those in use in some places in this country.

On Long Island, opposite Manhattan, there is the very large water-gas works before mentioned, belonging to the same Company, which is sufficient for the manufacture of about 27 million cubic feet of gas per day. At this works, the coal is raised by means of similar grabs from the boats in the river. The grabs empty the coal into side-door hutches, which run down inclined overhead rails. After being weighed—which operation only occupies about a second—the hutches run down the incline, picking up a wire rope on the way. A block is fixed near the rails where it is required to deposit the coal, and this, by means of a trigger arrangement, opens the side doors of the hutches; thus emptying them. The wire rope referred to passes round a pulley, and is weighted, so that the hutches, when emptied, are pulled back at a great rate. Though quite simple, this seemed to be a very efficient arrangement. In other parts of the same work there are band conveyors for coal and oxide; and there is also a system of rails and hutches for getting rid of ashes, from which all cinders and coke are, however, first carefully sifted, to be sent back to the generators.

In the extensive and up-to-date works at Point Breeze, Philadelphia, there is a very complete system of modern apparatus for taking delivery of coals, either from boats or railway cars. The American railway cars, it should be noted, always contain about 50 tons. The anthracite coal for the water-gas plant in these works is conveyed into a central V-shaped tank running lengthways of the generator-house. From this tank the coal is run through shoots into travelling weighing machines, from which it is dropped into the generators as required.

In one of the Chicago gas-works, the fuel for the generators is hauled up inclined rails to the charging floor in small tipping waggons, by means of an endless chain running in a slot between the rails. There are projecting hooks on this chain at every other link, to which the waggons can be attached very quickly at any required point; and they can also be released as quickly for weighing. An advantage of this arrangement is that the waggons can be detached from the chain and run in any required direction, either off or on the rails. The ashes in the works referred to were removed in the same way.

When I visited the new gas-works at Milwaukee, preparations were being made in the yard for the erection of coke-stacking plant; and coal-elevators and conveyors were also being erected. The work was not, however, far enough advanced to enable one to form a fair opinion of them. There is no doubt, however, but that the arrangements will be very complete. I noticed a small locomotive in these works, evidently intended for use in the yard, and designed to work with compressed air. The boiler is immensely strong, and will be filled at intervals with compressed air from the fixed plant in the work.

At the Montreal Gas-Works, the coke is conveyed away from retorts in small side-tipping waggons, which are drawn up from the vault below the retort charging floor by a small stationary winding engine. The waggons are then hauled up inclined rails by the same means, and the coke is tipped out over screens into the coke yard. I was informed that this arrangement for the removal of coke was quite effective and very economical.

Summer is not a good time for studying public lighting; and in a visit like mine very few particulars could be ascertained in connection with the systems of mains and services in the various cities passed through. I was interested, however, in observing the method of supplying the outlying districts about Milwaukee from heavy pressure mains through double governors placed in chambers under the roadway. The first, or safety, governor is regulated to about 5 inches pressure, and the second to the working pressure—about 2½ inches. These governors are filled with glycerine to prevent freezing (sometimes kerosene is used in the States for the same purpose). On a light bridge over the Milwaukee River, near the same city, I also noticed a 12-inch main, about 800 yards long, formed of welded tubes screwed together with boxes. There were, of course, a number of expansion joints on this main, and, for convenience in laying, several ordinary flange joints too.

In connection with main and service laying, it is worth noting that the streets in American cities are not generally so well laid as those in our towns, though the buildings are often finer and the street cars, &c., better. Even in New York, the paving of many of the principal streets is very defective. Tramway and other rails frequently project several inches above the surface of tha carriage way, and there are many interesting "hazards" to be encountered while walking on the footpaths. In Baltimore, the general condition of the streets was even worse than in New York; and, in addition, open drains or water runs might be seen crossing them in many places. In Chicago and Milwaukee, the carriage ways of many streets are formed of roughly cylindrical blocks of wood—like pieces sawn off the smaller branches of trees, set on end; the spaces between being filled in with sand or ashes. There are many miles of wood footpaths, too, in these and other cities. These footpaths resemble those temporarily laid down in our cities where buildings are being erected.

In Pittsburg and Chicago, I noticed natural gas being used in furnaces and for water heating, &c.; and, on the way to Carnegie's works, near the former city, I was surprised to see it being consumed, in broad daylight, at the top of numerous cast-iron columns, similar to lamp-pillars. But it seems that this is the only practical way known for getting safely rid of the inevitable leakage from the joints of the high-pressure mains through which the gas is conveyed to the cities. These mains are over 100 miles long in some cases.

The removal of dwelling-houses in the American way—without taking them down—must sometimes be important to gas engineers in the States, though a description of the way in which the work is done might not be even interesting to gas engineers on this side. I spent an hour one Sunday afternoon, however, going into the details of the process. An hour or two spent in Carnegie's Steel Works at Homestead and Duquesne I also found very instructive, though rather hot; but it was perhaps inexcusable for a "gas man" to visit the stock yards at Chicago—there being little in the gas line to be found there. The Capitol at Washington, Mount Vernon, and the National Cemetery at Arlington always recur to my mind as the most interesting sights in the United States—except, perhaps, Niagara (and the better half of that is in Canada). The voyage from Niagara across Lake Ontario, among the Thousand Islands, and down the St. Lawrence and its rapids to Old Quebec, with its famous fortress, its many churches, and queer "Golden Dog" with the uncharitable motto, formed a splendid finish to my tour in America.

At the general meeting of the Institution of Mining Engineers, to be held in the rooms of the Geological Society, Burlington House, Piccadilly, on the 2nd and 3rd prox., the following papers will be read or taken as read: "The Analytical Valuation of Gas Coals," by Mr. G. P. Lishman; and "Petroleum and its Use for Illumination, Lubricating, and Fuel Purposes," by Dr. Dvorkovitz. The papers submitted at the previous meeting by Mr. H. B. Woodward and Mr. R. Pearson on the subject of the discovery of natural gas at Heathfield, already noticed in the "JOURNAL," will be open for discussion.

A large dinner party was recently held at "Norwood," Broughton Park, to celebrate the "silver wedding" of Mr. and Mrs. Robert Dempster, who were married at Trinity Chapel, Bradford, on April 23, 1879. They went to reside at Higher Broughton more than twenty years ago, when Mr. Dempster, in company with his brother, Mr. John Dempster, established the now well-known firm at Newton Heath. Besides carrying on this extensive business, Mr. Dempster and his brother are joint proprietors of the blast furnaces at the Langloan Iron-Works, Coatbridge; and, among other industries, they are largely interested in the chemical trade, in which they have the control of the chemical bye-products from nearly a million tons of coal per annum. Mr. Dempster is the eldest son of Mr. Robert Dempster, of Eden Hall, Penmaenmawr, North Wales; and it is interesting to recall, in connection with the above event, the fact that he and Mrs. Dempster celebrated their golden wedding on Dec. 13, 1900.

MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.

Quarterly Meeting at Stoke.

The One Hundred and Thirty-Eighth Quarterly Meeting of the Manchester Institution, held at Stoke-on-Trent on Saturday, was a very interesting and enjoyable gathering. About eighty members attended, and spent an exceedingly pleasant afternoon under the most congenial and summer-like conditions. The proceedings commenced with visits to the tile works of Messrs. Minton, Hollins, and Co., the Stoke and Fenton Gas-Works, and the china factories of Messrs. Mintons, Limited, and Messrs. Copeland and Sons. At the gas-works there was a demonstration of the Minimax fire extinguisher—dry boxes and tar being ignited for practical demonstration purposes; and in each instance the flames were subdued in a few seconds by the aid of this process. Subsequently a reception was held at the North Stafford Station Hotel, by Alderman Frederick Geen, the Chairman of the Stoke-upon-Trent Corporation Gas Committee, who was accompanied by Mr. C. H. Robinson, the Vice-Chairman, and Mr. J. B. Ashwell, the Town Clerk. Luncheon was afterwards served at the Hotel, on the invitation of Alderman Geen. At the conclusion of the luncheon, the party were conveyed in brakes to the delightful residence of his Grace the Duke of Sutherland; the beautiful grounds of Trentham Hall, some 700 acres in extent, being specially opened for the occasion. Under the direction of Mr. Peter Blair, his Grace's head gardener, the party made an inspection of the grounds and magnificent greenhouses, and were greatly pleased with their visit. Re-entering the brakes, the party were driven through the park and woods to the Trentham Hotel, where tea was provided.

The Business Meeting.

After tea, the business was transacted under the presidency of Mr. H. Townsend, of Wakefield.

The Acting Secretary (Mr. R. G. Shadbolt) announced that a number of letters of apology for non-attendance had been received, including one from Mr. F. P. Tarratt, the President of the North of England Association, and another from Mr. J. H. Troughton, the President of the Eastern Counties Association.

The Affiliation Question.

The President opened the proceedings by referring to the question of affiliation. He observed that this matter had been before them on two previous occasions; and at the last meeting the following resolution was unanimously passed: "That the Committee of this Institution is prepared to recommend the members of the Manchester District Institution to become affiliated to the Institution of Gas Engineers, subject to the scheme being workable and of general advantage to the gas industry, and would suggest that a Sub-Committee be formed co-opted with the Presidents of the eight District Institutions to consider the question and formulate a scheme." The Institution of Gas Engineers adopted the course which they had recommended; and on April 7 a meeting was held of the Special Committee of the Institution of Gas Engineers, co-opted with the Presidents of the District Associations. Resolutions were passed and adopted by the Council of the Institution at a subsequent meeting held on the same day, recommending affiliation with the District Associations on the following terms:

(1) That the names of the District Associations be retained, and that the rules of each Association shall not be subject to revision or alteration without the consent of the respective members of it.

(2) That the management of each District Association shall be in the hands of the Committee appointed by its own members, and the finances shall be under the control of that Committee.

(3) That each District Association shall select annually a member of its body, who is a member of the Institution of Gas Engineers, who shall become an *ex-officio* member of the Council of the Institution; and each District Association shall pay annually an affiliation fee of five guineas.

(4) That the members of each District Association (who are qualified to become members under the Articles of Association of the Institution) shall be eligible for election to the Institution without entrance fee for a period of twelve months after affiliation.

He thought these terms commended themselves to their acceptance. (Applause.) There could be no doubt that the closer union of the District Associations with the parent body would be beneficial to both, as it would enable the Central Institution to represent the views of the whole industry; while each District Association had the advantage of directly controlling the policy of the Institution through its special representative on the Council, at the same time retaining the management of its own affairs entirely in its own hands. It would, he considered, be of great assistance to the Institution of Gas Engineers in asking the consent of its members next month to the necessary alteration in the rules in order to accomplish affiliation, to have the assurance of the support of as many of the District Institutions as possible. He therefore moved—"That the Manchester District Institution is prepared to accept affiliation with the Institution of Gas Engineers on the terms adopted by the Council of the Institution on April 17, 1904."

Mr. Meunier (Vice-President) seconded. He felt certain that affiliation could only work for one object—viz., the strengthening of their profession throughout the United Kingdom.

The resolution was carried unanimously.

The President proposed a very hearty vote of thanks to Alderman Geen for his kind hospitality. He had received them that day at great inconvenience. When the Council of the Institution met to select the place to visit, they were very pleased to receive a cordial invitation from Mr. Prince to visit Stoke, and they had no hesitation in unanimously accepting it. But, on the day after the acceptance, he (Mr. Townsend) was upset to receive a letter from Mr. Prince stating that, owing to the absence of Alderman Geen, he was afraid the meeting could not take place. However, after pointing out to Mr. Prince how awkwardly they would be situated if the meeting had to be postponed, he consulted his Chairman by wire, and thus secured the necessary permission for them to visit Stoke. The kindly action of Alderman Geen on this occasion got them out of a very awkward dilemma; and they were not only greatly indebted to him for thus coming to their rescue, but also for his generous hospitality, which had so much added to the enjoyment of the visit. He had availed himself of the privilege of visiting some of the interesting works which could only be seen in this district, and he was very glad indeed that he had done so. He had enjoyed himself immensely, and his one regret (which he was sure was shared by all present) was that they had not more time to spare on the visit. They had, by the kindness of the Duke of Sutherland, been permitted to visit one of the picture spots of the country; and in the lovely grounds of Trentham they had had quite a revelation of the beauties of this part of the country.

Mr. Meunier seconded the resolution, which was carried with enthusiasm.

Alderman Geen, in returning thanks, assured them that he needed no thanks for the small part he had taken in the day's proceedings. When Mr. Prince informed him that arrangements had been made for holding their conference in Stoke, he thought that so important a matter should have rather more consideration, and probably more time should be allowed for the completing of arrangements than either Mr. Prince or himself (the speaker) would be able to give. This was why he suggested a postponement of the gathering to some future occasion. However, when Mr. Prince telegraphed to him in Devonshire that the announcement of the visit to Stoke had been made, he wired back to him authorizing him to make such arrangements as he might think best. Everybody who was acquainted with the Potteries people knew perfectly well that if there was one trait more prominent than another, it was that of hospitality. He could not for a moment think of allowing it to be said by anybody that this characteristic was in any shape or form taking a back seat on the present occasion. There was no doubt but that an organization such as theirs was of first-rate importance. When it was remembered they were the managers and engineers of concerns in which were invested huge sums of public moneys, it must strike anybody that the importance of their organization was very great. He was quite sure the corporations whose officials they were, had ample confidence in their judgment and ability; and, so far as he was personally acquainted with the gas managers and engineers, he could unhesitatingly say that they at all times, and in every way, endeavoured to promote the best interests of those whom they were serving. He believed they had shown this, and, indeed, they merited the confidence of the various Gas Committees; and those of them who, like himself, had the responsibility of the Chairmanship of a Committee, felt sure that they had always endeavoured to so curtail expenses, and at the same time to produce the very best profits and gas, with a view to giving the ratepayers and the Committees every reason to be proud of the undertakings they owned. He assured them that in the spending of public money every saving they could effect would be appreciated very highly by Gas Committees, and also by the ratepayers generally. He knew perfectly well that at times large expenditures of public money were undertaken with the view to effecting a saving. This was, he admitted, often desirable; but, at the same time, he felt that, with trade so depressed, when money was dear and scarce, every proposal to spend ought to be very carefully considered before it was made. Personally, he had every reason to believe that gas engineers did fully consider their proposals before submitting them to their Committees. If this was done, he felt convinced that their profession would be held in the highest possible esteem by everybody concerned—from the Mayors to the most humble of the ratepayers. For the admirable arrangements for the gathering they had to thank Mr. Prince, who had worked hard to make it a success.

Votes of thanks were afterwards accorded Mr. Prince, Mr. Surtees, the Duke of Sutherland, Mr. Blair (His Grace's head gardener), and the Chairmen and members of the Gas Committees of the Stoke and Fenton Councils.

Messrs. Prince, Surtees, and Blair replied.

After a drive back to the North Stafford Hotel, Stoke, the party dispersed.

In connection with the visit an interesting souvenir in book-form was prepared and issued by Mr. Prince.

MANCHESTER AND DISTRICT JUNIOR GAS ASSOCIATION.

Visit to the Works of Messrs. Graham, Morton, and Co., Limited.

Last Saturday, the members of the above-named Association, to the number of about 25, had a very interesting excursion to Leeds, where they visited the works of Messrs. Graham, Morton, and Co., Limited, at Hunslet, and afterwards inspected the extensive range of inclined retorts which the firm are erecting at New Wortley. On the party arriving in Leeds, they found conveyances waiting to drive them direct to the Hunslet works, where, in the unavoidable absence of Mr. Graham, they were received by the General Manager (Mr. Greaves), the Secretary (Mr. Goodall), the Works Manager (Mr. Wheeler), and the Foreman (Mr. Tranfield), under whose guidance they were conducted through the range of staff and technical offices and over the various departments of the works. As a very complete description of this vast establishment was recently given in a supplement to the "JOURNAL," it is unnecessary on this occasion to notice the various departments in detail. Briefly, it may be stated that the works, which cover an area of 420 feet by 55 feet, and the offices, which are 270 feet long and 41 feet wide, were built and equipped in the marvellously short period of five-and-a-half months.

The offices were first gone through; and the general arrangement of these elicited the highest commendations of the visitors, particularly on account of their elegant up-to-date equipment, their lightness, and the careful provision made for the comfort of every section of the staff. Passing on to the works, the fitting, machine, erecting, chain, blacksmiths', and tool shops and stores engaged special attention. In these shops, which are divided into three bays, with two lines of railway running through the works, and each being traversed by overhead electric travelling cranes, special interest was taken in the number of modern tools employed, many of which had been built from the special designs of the firm for their own particular class of work. The method of driving, which, as well as for lighting, is by electric power throughout—the machine tools being driven in groups, and the blowing-fan for the smithy by separate motor. The hydraulic plant for operating powerful presses and pneumatic rivetters also engaged considerable attention. Special interest was taken in several complete working sections of special apparatus manufactured by the firm, which included a hot-coke conveyor (of similar design to a plant the Company have recently erected in Paris), their belt conveyors for collieries and gas-works, and their coal-elevators for gas-works. In passing through the works, the visitors were shown a number of important contracts at present in hand, among which were a coal-handling plant for the Chatham Dockyard; a large coal-conveying plant for Messrs. Brooks, of Huddersfield; an extensive plant for Messrs. J. J. Charlesworth, Limited, of Wakefield, consisting of creepers, for the bank arrangements, pit cages, screens, picking and conveying belts, &c. The whole of this the firm have undertaken to carry out in four months; while the time for the erection on the site is not to exceed six weeks. Other contracts in hand were a large screening plant for the New Monkton Collieries; a conveyor for Messrs. Bolckow, Vaughan, and Co., Limited, consisting of a rubber belt, 18 in. wide by 690 ft. long to be supported on overhead gantry trestles, besides a number of smaller contracts for gas-works and other purposes. In fact, so great is the pressure of orders the firm are receiving, that, notwithstanding these new works have only been so recently completed, extensions have already become absolutely necessary, and they have commenced the erection of two additional bays, 52 feet wide and running the whole length of the existing shops.

Returning to the offices, where tea had been provided,

The VICE-PRESIDENT (Mr. J. F. Smith), in the absence of the President (Mr. W. Hill), said it had fallen to his lot to perform the very pleasing duty of proposing a vote of thanks to Messrs. Graham and Morton, and to the members of their staff who had shown them over the offices and shops, for the facilities for so thorough an inspection of a modern works specially erected for the manufacture of plant directly connected with the gas-making industry, and for the kindly and hospitable manner in which the members of the Association had been received. Mr. Graham had written to the Hon. Secretary (Mr. Oldfield) stating that he was exceedingly sorry he would not be able to join them during their inspection of the works. However, he had deputed Mr. Greaves, the General Manager, and Mr. Goodall, the Secretary, to look after the comfort of the members; and he hoped they would have a pleasant afternoon, both at the works and also during the visit they would pay to the large installation of inclined retorts being erected at the New Wortley Gas-Works. He was sure, the Vice-President proceeded, that all of them would highly appreciate this kindly letter from Mr. Graham; and it was scarcely necessary to say on their behalf that they had spent a very pleasant and instructive afternoon in going through the offices and works. They had been enabled to inspect in the fullest possible manner all the special arrangements and processes the firm had introduced; and from the staff they had received the greatest attention and every information or explanation desired. Personally, he might say he had never seen a better system of works management, which reflected the greatest credit upon the firm.

Mr. GARLICK, in seconding the vote of thanks, which was most heartily accorded, added his appreciation of the generous manner in which they had been treated. They had been shown over the works in a very intelligent manner, which had made every point clear; and their visit had been one of exceptional interest.

Mr. GREAVES said, in the absence of Mr. Graham, he wished to thank the members for the very kind words that had been spoken, and he would have great pleasure in conveying their vote of thanks to Mr. Graham.

The members were then driven to the New Wortley Gas-Works, for the purpose of inspecting the installation of inclined retorts in course of erection there by the firm, of which an illustrated description was given in the "JOURNAL" for March 15 (p. 690). They were accompanied by Mr. Greaves and Mr. Tranfield, who minutely explained every detail; and as the range of beds was in various stages of construction, exceptional opportunity was afforded for a thorough investigation of all the special features of the work. The retort-house, it may be mentioned, is 290 feet long and 70 feet wide; and the contract which Messrs. Graham, Morton, and Co. are carrying out consists of two benches of inclined retorts, each containing eleven beds of eight, including furnaces, settings, main flues, superstructure, stages, staircases, retort-fittings, and conveying machinery complete. The coal-handling plant is to be entirely in duplicate, capable of dealing with 40 tons of coal per hour; and it will consist of two receiving hoppers delivering into coal and cannel breakers by means of an automatic feeder. The elevator is of the twin cased-in type, the buckets being 24 inches wide; and these two elevators will be about 80 feet long. They will deliver into four push-plate conveyors, two over each storage bunker. The plant is to be driven by gas-engines, which will be in duplicate; and the estimated gas production is 2½ million cubic feet per 24 hours. Quite a long stay was made in the retort-house—the members going into every detail of construction; and it was only as darkness came on that the party made their way back to Leeds for the return journey to Manchester.

North British Association of Gas Managers.—The Committee of the Association are making preparations for the annual meeting, which will take place in Glasgow on the 28th and 29th of July. With the view of rendering the proceedings as interesting and instructive as possible, the Secretary (Mr. R. S. Carlow) is sending out the usual circular asking for the assistance of the members by contributing papers, and submitting a list of subjects from which to make a selection. They are sufficiently varied to suit all requirements; and it may be hoped that they will be helpful in making a full programme.

A Differentiator.—An interesting exhibit at the *conversazione* of the Royal Society, noticed elsewhere, was Mr. J. Erskine Murray's differentiator—an instrument which is likely to be of great practical utility. It records as a curve the values of the rate of change of any variable quantity which can be represented by a curve. When the machine is guided along a curve, it automatically traces another, which gives the rate of change of the quantity represented by the first curve. Thus, if the population of a country at various dates be plotted on paper, the derived curve shows the rate at which the population is increasing or decreasing at every date during the period chosen for which the population is represented; but the machine can be applied to the study of rates of change in many other directions.

British Association of Water-Works Engineers.—A very interesting programme has been prepared for the ninth annual meeting of the Association, which will be held at Hull from the 9th to the 11th prox., under the presidency of Mr. F. J. Bancroft, B.S., Assoc.M.Inst.C.E., the Water and Gas Engineer to the Corporation. The Council Chamber has been placed at the disposal of the Association for the purposes of the meeting, at the opening of which the Mayor (Alderman Jarman, J.P.) will welcome the members to Hull, and subsequently entertain them at luncheon. The following papers will be read with a view to discussion: "The Working Costs of Water-Works Pumping-Engines," by Messrs. Meysey Thompson and Hugh Lupton; "The Geology of South-East Yorkshire," by Professor Percy F. Kendall, of the Yorkshire College, Leeds; "The Definition of 'Pure and Wholesome Water,'" by Dr. J. C. Thresh, Medical Officer of Health for Essex; "Puddle and Concrete for Reservoir Embankments," by Mr. W. Watts, Past-President; "Air-Lift Pumping Plant at the Birkenhead Corporation Water-Works," by Mr. J. W. M. Richardson, Water Engineer to the Birkenhead Corporation; "The Treatment of Moorland Water," by Mr. C. Clemesha Smith, Water Engineer to the Wakefield Corporation, and Dr. E. M. Chaplin; "The Administration and Control of the Nation's Water Supply," by Mr. R. E. Middleton, M.Inst. C.E.; and "The Appleton Extensions of the Warrington Corporation Water-Works," by Mr. G. Mitchell. In addition to these, the President will give a history and description of the Hull Corporation Water-Works, which will be visited by the members. The annual dinner will be held on the evening of the second day of the meeting; and on the last day a party of about a hundred, including ladies, will start for Belgium, to inspect water-works, pipe-foundry, &c., and visit some of the beauty spots of the country, among which will be the famous Grotto of Han. These visits will occupy the party until the 17th, when they will return to England.

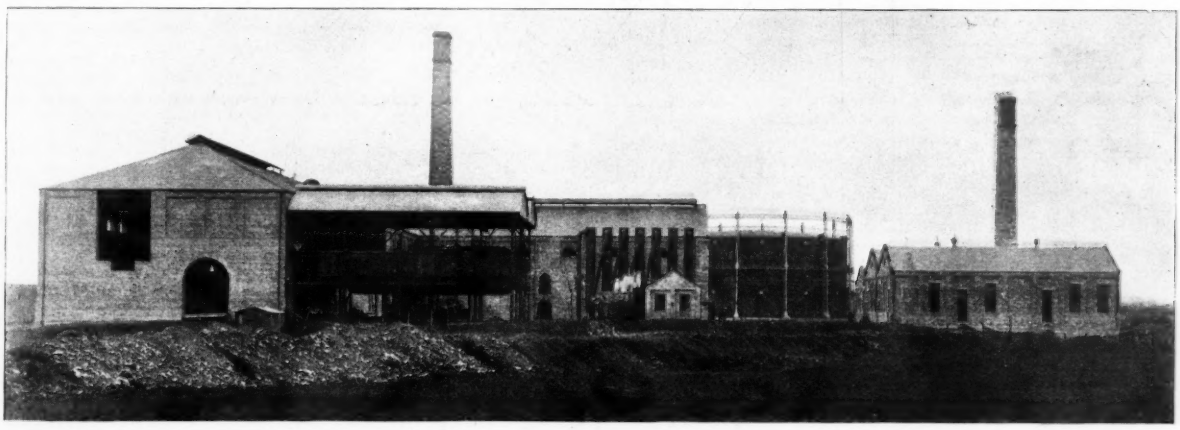
NEW GAS-WORKS STATION AT KILMARNOCK.

Description of the Works.

Last Tuesday, a new gas-works station, erected by the Corporation of Kilmarnock at Riverbank, destined to entirely supersede the existing gas-works, was formally inaugurated. A number of visitors, including not a few managers of gas-works, had been invited for the ceremony; and the proceedings partook largely of a festive character, which were thoroughly enjoyed, notwithstanding that the weather was occasionally a little on the wet side, and the temperature was not over high. Those who arrived early had a look at the old works, which are situated at the highest part of the town; and but a short time was required to satisfy them of the wisdom of the step the Corporation have taken in providing new ones. The works are so hemmed in that expansion is impossible, except at an outlay which would have been practically prohibitive. As the consumption of gas has increased very rapidly of late—it has gone up during the past ten years from 82 to 152 million cubic feet a year—it became apparent to Mr. W. Fairweather, the Engineer and Manager, that something must be done at an early date to enable them to meet the demand. On looking about for a site, the Corporation were fortunate in finding one at the very lowest part of the town, close to the burgh boundaries, in a gusset-shaped piece of land at the junction of, and lying between, the River Irvine and the Kilmarnock Water. Of this, they purchased 16 acres, at the price of £6000; but of the area acquired only about 13½ acres will be available for works, because river beds and rights-of-way absorb a considerable portion. On the other hand, the rights-of-way are not altogether lost lands; and the rivers, again, supply water in abundance. There was a drawback to the site, inasmuch as it was liable to be flooded, particularly from the Irvine. This front has been banked up, and the general level of the ground is being raised—in some places by as much as 6 feet. The subsoil is a gravel bed, varying from 9 to 19 feet in thickness, below which is a firm clay, which makes an excellent foundation. Water is encountered 5 feet from the surface; and, from the open nature of the ground below this level, it flows freely in from the river. On the other side of the Irvine is a newly-constructed branch of the Glasgow and South-Western Railway. At present negotiations are in progress with the Railway Company for the carrying of the railway across the river, through the gas-works, passing along the entire length of the coal-store, inside, at a high level, and continuing onwards across the yard and into the electricity works of the Corporation, which are in course of erection on land immediately contiguous to the gas-works.

The works were begun on April 10, 1902, and gas was first made in them on Dec. 25, 1903. Their total cost, exclusive of site and other charges, has been about £30,000. Their capacity at present is 75 million cubic feet per annum. It is almost needless to say that the space is so ample that all the departments may be extended when required; provision being made which will render this operation possible at small outlay. When mentioning space, it may be stated that the area upon which the old works stand is only 3½ acres.

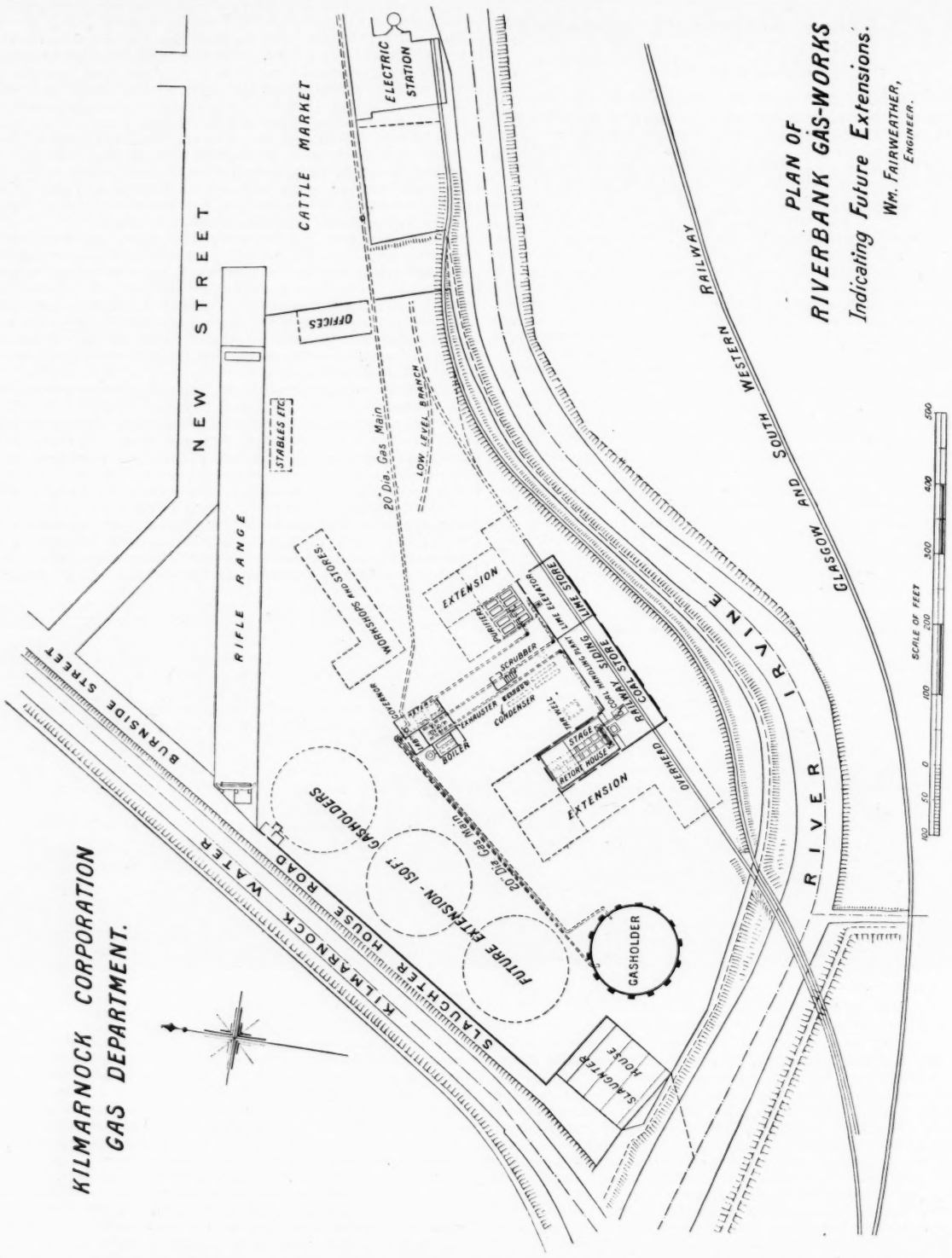
The first part of the work undertaken was the erection of a gasholder, of 650,000 cubic feet capacity. The construction of the tank was entrusted to Messrs. Boyd and Forrest, a local firm. It is 122 feet in diameter and 36 ft. 9 in. deep, with walls 3 ft. 6 in. thick at the bottom and 2 ft. 3 in. at the top. They were formed of two rings of brick, with cement concrete between. Timbering was necessary, on account of the loose nature of the soil. All the gravel and sand required were found in the excavation. Water was present in such quantities that Pulsometer pumps had to be kept going, which discharged into the river at the rate of from 10,000 to 15,000 gallons per hour. The cone, 19 feet high and 64 feet in diameter at top, has been made water-tight by concrete.



The Riverbank Gas-Works, Kilmarnock.

The gasholder inlet and outlet pipes are 12 inches in diameter. The tank was filled with water on Nov. 30, 1902, and has proved to be quite tight. Into the tank wall 14 piers 5 ft. 6 in. square, have been built for the standards; and 28 concrete rest-blocks take the weight of the holder when down. The standards are bolted to the piers with bolts 10 feet long. The gasholder is telescopic, the outer lift being 120 feet, and the inner lift 117 feet, in diameter, and each 30 feet in depth. The standards, made of mild steel, are 61 feet in height, and are braced together by lattice girders. The rise of the dome is 6 feet. It was built by Messrs. Clayton, Son, and Co., Limited, of Leeds; and its construction occupied from Jan. 6 to April 30, 1903.

The retort-house and coal and lime stores are L-shaped. The shorter leg contains the retort-bench, which does not as yet occupy quite half of the space provided for it. The house is 60 feet wide and 32 ft. 6 in. high to the coves; the rise of the roof at the centre being 16 feet. The coal-store is a capacious apartment, 178 feet in length, 60 feet in width, and 32 ft. 6 in. in height. It provides storage for 4500 tons of coal. The lime-store, of the same dimensions, adds 100 feet to the length of the building. Part of the floor is intended to be used for the revivification of oxide, none of which is at present used, but which in all probability will be. The retort-bench is on the stage-floor principle, the height of the charging stage being 10 feet. There are eight ovens, in settings of eights—64 retorts in all—D-shaped, 9 feet long and 21 in. by 15 in. inside diameter. They are placed back to back. The firing is by Siemens regenerative furnaces, with inside producers. The main floor is 4 feet square, with 4½ inch mid-feathers; and the chimney—a square structure—is 120 feet high, with a vent 5 ft. 6 in. square. Hand labour only is used in charging and drawing the retorts; but there is ample room for the introduction of mechanical stoking. At the end of the retort-bench have been placed a coal breaker and elevator, which works into hoppers, one on either side of the retort-bench, and each of 15 tons capacity. The combination of coal elevator and hoppers with hand stoking seems somewhat out of place; but, of course, the arrangement has been made in view of the adoption of machinery for the stoking work. The retort-bench was built by Mr. K. S. Workman, of Saltcoats, and the ironwork of the bench was provided by Messrs. Hanna, Donald, and Wilson, of Paisley. The coal-handling plant was supplied by Sir William Arrol and Co. The condensers (supplied by Messrs. James Milne and Son, Limited, of Edinburgh) are of the annular type. There are seven columns, 30 feet high and 3 ft. 6 in. outside diameter. The same firm also furnished a horizontal rotary washer-scrubber, of the "Standard" pattern of Messrs. Kirkham, Hulett, and Chandler, Limited, capable of dealing with 2 million cubic feet of gas per 24 hours. The building which contains the driving gear for the scrubber also serves as a tar and liquor pump room; the pumping being effected by a Tangye machine. The exhausters are housed in a building which, in another division, also contains the station meter and governor. The exhauster plant is in duplicate; each set being capable of passing 50,000 cubic feet of gas per hour. It was furnished by Messrs. R. Laidlaw and Son, Limited, of Glasgow; and the driving-engines by Messrs. T. & J. Stevenson, of Kilmarnock. Steam is obtained from a Lancashire boiler in an annexe, fitted with Meldrum's patent furnace for consuming breeze. The station meter and governor were supplied by Messrs. Parkinson and W. & B. Cowan, Limited. The meter is of 80,000 cubic feet per hour capacity; and the governor is a 20-inch one, of the equilibrium type. There are four purifiers, each 25 feet square and 6 feet deep, of Green's dry-lute type. Being on the first floor, the spent lime or oxide is discharged through the bottom of the house. The Barrowfield Iron-Works, Limited, of Glasgow, were the contractors for the purifiers. An elevator, capable of raising 15 tons of lime or oxide per hour to the stage-floor, was put in by the New Conveyor Company, Limited, of Smethwick. In the yard there is a tar and liquor well, formed by the angle of the main buildings, with an arrangement by which tar or liquor can be pumped from it at will.



The whole of the mains in the works are 20 inches in diameter. They were supplied by Messrs. R. Laidlaw and Son, and the special castings and valves by Messrs. Glenfield and Kennedy, of Kilmarnock. The work of laying and connecting was carried out by the Corporation's own workmen. A 20-inch main has been laid from the holder into the town, a distance of 850 yards. It terminates in a dead-end, with a view to a future extension. A 9-inch main, 1270 yards in length, goes farther into the town; and upon it valves have been placed, to allow of gas being taken from either the old or the new works. This arrangement will allow the lower parts of the town to be supplied from either works as desired, while the higher parts will be served by the old works until such time as the plant is worked out, along with which process the distribution system will be gradually coupled on to the mains from the new works. This may occupy ten years or less, according to circumstances.

The whole of the works were designed by Mr. Fairweather, who also, with the assistance of his son, Mr. Charles Fairweather, drew all the plans and specifications. As much as possible, the contracts were let to local tradesmen. The buildings have been erected in plain style, of white composition bricks, and roofed with slate. There has been no attempt at ornamentation; but, on the contrary, simplicity of design rules everywhere—Mr. Fairweather's aim being to produce works which will be substantial and also serviceable.

The Inaugural Ceremony.

The company assembled in the Council Chamber, where they were welcomed by Provost Hood. A pleasant drive soon brought them to the new works, where some time was spent in their inspection—the coal breaker and elevator being the objects of most attention. When the exhauster-house was reached, Mr. Fairweather introduced to the visitors Bailie Robertson, the Convener of the Gas Committee.

Bailie ROBERTSON having started the engine which drives the exhausters, said the apparatus, so far as one could see, would do its work thoroughly, and would render good service to the Corporation. The best testimony in its favour was, perhaps, that it had been supplied by the well-known firm of Messrs. R. Laidlaw and Son, of Glasgow. The engines, which were made locally, they would observe, worked smoothly and well.

Referring to the governor-house, Mr. Fairweather asked Provost Hood to turn the gas on to the governor. This having been done,

Provost HOOD said he felt it to be a great honour to perform the

ceremony. They hoped that these fine works would meet their requirements for many a day. They would be a great saving to the town, as they would be able to produce good gas at a low price. He should like to give expression to the debt of gratitude they owed to Mr. Fairweather. He was sure they must all be satisfied that the works had been planned by a man of experience, and one who knew thoroughly what he was about. The works had been arranged so that they could be added to as the needs of the town increased. They all hoped they would prove to be a great benefit, not to the Corporation only, but to the whole community, and that everybody would be satisfied with the results.

On leaving the works, the party were driven round the outskirts of the town, so that some of the features of the place might be seen, particularly the Kay Park, in which stands a handsome monument to Burns. Alighting at the George Hotel, they dined together, with Provost Hocd in the chair and Bailie Robertson discharging the duties of croupier.

When the toast-list was reached,

Mr. T. KENNEDY proposed—"Success to the Gas Undertaking." He said that in 1872 the Town Council purchased the gas-works, and in so doing they did one of the best strokes of business for Kilmarnock that had ever been accomplished. It was 27 years since he joined the Gas Committee, and he had found it to be a very excellent Committee. When he saw the new works a few days previously, he was completely amazed. They must have cost Mr. Fairweather an immense deal of trouble. When regenerative firing was introduced, the producers were placed down in the cellar; now they were in daylight and in fresh air. He had no doubt that when the railway was brought in, the works would be model ones. The only thing he would like to see added was mechanical stoking; and this, no doubt, would come.

Bailie ROBERTSON responded. He said that while they had every reason to be satisfied with the results obtained from the old works, he had good cause for expecting greater success from the new ones. He could not miss the opportunity of saying how much they appreciated and admired the services of Mr. Fairweather, who had engineered the whole scheme. Undoubtedly the Corporation were indebted to him for the success of the works, so far.

Ex-Provost MACKAY proposed—"The Manager." He said Mr. Fairweather had been about twenty years in the service of the Corporation, and during all the time he had been associated with him. He could therefore say that their Manager was thoroughly respected and esteemed for what he had done.

Mr. FAIRWEATHER, in responding, said he thought the Gas Committee had nearly spoiled him. They had given him everything he asked for, and he sometimes thought this was too much.

Bailie TURNBULL proposed—"The Contractors."

Mr. D. MACFIE (Edinburgh) responded, and, in the name of the Contractors, presented an antique timepiece, with side ornaments, to ex-Bailie Muir (who was the Convener of the Gas Committee when the new works were devised), and silver salvers to Bailie Robertson and Provost Hood.

Mr. J. HEPWORTH (Edinburgh), in also responding for the Contractors, said that with one exception the Kilmarnock Corporation gas undertaking stood the lowest in Scotland in the amount of capital expenditure per 1000 cubic feet of gas made. Glasgow had always occupied the first position. There the sum was 6s. 8d.; and Kilmarnock came second with 6s. 9d. In Edinburgh, they had the modest sum of 13s. 10d.

Provost HOOD and the other gentlemen returned thanks for the gifts.

Bailie PEARSON proposed—"The Gas Profession;" and the toast was acknowledged by Mr. A. YUILL (Dundee) and Mr. J. M'GILCHRIST (Dumbarton).

At the conclusion of the toast-list, a short concert by members of the company filled up the time till the arrival of the train by which most of the visitors left Kilmarnock.

GAS POWER FOR THE TEXTILE INDUSTRY.

The above subject formed the basis of a paper by Mr. B. H. THWAITE, Assoc. M.Inst.C.E., at the annual meeting of the New England Cotton Manufacturers' Association, held in Boston (Mass.) towards the close of last month. The following is an abstract of the communication.

The author began by saying he had had the privilege of perusing a paper on "Mud Fuel," contributed to the Berkshire meeting of the Association by Mr. E. Atkinson, who expressed the opinion that the wasteful steam-boiler and engine would soon give place to the internal-combustion or gas engine for all stationary power requirements; and he suggested that the "bog fuel" with which he had experimented would be suitable for making gas for driving engines. Mr. Thwaite went on to explain that this bog fuel differs very little, if at all, from peat, with which he had experimented for making power gas, which acted perfectly in an engine; the indicator diagram being almost the same as one obtained with poor coal.

In the year 1889, in the course of a lecture on "Mill-Engines" delivered by the author before the Yorkshire College Textile Society, he expressed the opinion that there were no grounds for the prediction which had been made that the steam-engine would become obsolete. This opinion he had been compelled to change, in face of the irresistible evidence his own experience has produced. His investigations into the question of generating motive power by direct combustion commenced soon after he delivered this lecture; and in the course of them almost every available fuel was employed—wood, charcoal, peat or bog fuel, coke, coal, both anthracite and hydrocarbonaceous—and he found that all these fuels are available for producing motive-power gas. The result of his work, and especially that associated with the utilization of the waste gases from blast-furnaces for gas-engines, has been to elevate these engines to a height above possible competition by the steam-engine, whether rotative or reciprocating. One of the main issues from these investigations was the fact that, by the compression of the explosive mixture, a combustible gas of almost any thermal value above 50 British heat units per cubic foot can be employed in a gas-engine.

This fact, once demonstrated, brought into the field of future service the enormous volumes of waste gases that flow into and pollute the atmosphere at every iron-making centre. To meet the demand for engines to utilize this awful waste of power, many eminent engineers in Europe have for several years been applying almost their entire attention to designing engines to secure all the qualifications that a steam user and electric supply consumer must have; and in Germany alone it is said that upwards of 50,000-horse power of large capacity gas-engines are in active service. As a result of his success, he was permitted in 1897-8 to displace a steam-engine by a gas-engine in a textile factory near Leeds—a power-gas generator of his design permitting the gas to be supplied from coke breeze. The power user of this plant has kept his engine in daily service for some six years, and he is, if possible, more enthusiastic now in his appreciation of this method of producing direct power than he was in the earlier stage of its operation.

An analysis of a gas-engine's thermal or heat expenditure shows that from 20 to 30 per cent. of the heat supplied is converted into dynamic energy, 20 per cent. is carried away in sensible form by the exhaust gases, and the balance, after allowance for the effect of the increase of the specific heat with temperature, is absorbed by the jacket water. This water will be available for heating purposes. If steam is, however, required, the cylinder jacket water can be used as the agent of evaporation, and the steam can be generated by the combustion of the gaseous fuel in a suitable water-tube boiler. In the application of the author's gas-power system to the driving of a textile factory, the cylinder jacket water is used for dyeing purposes, the exhaust gases are used for warming purposes, and the sensible heat of the producer gases is utilized to heat the air required to support the gasification process and also for drying purposes. It is claimed that the process gives a return, either as power or heat, of 80 to 90 per cent. of the heat stored in the fuel used in the generator.

A typical thermal balance of every-day running is made up as follows; the expenditure including week-end stand-by losses, and the heat value of the fuel being 100:—

Producer Gas Generation.	Per Cent.	*Gas-Engine and Heating Appliances.*	Per Cent.
Heat absorbed in gasification and radiation	10·0	Heat converted into work	18·5
Sensible heat returned by air heater or recuperator	9·0	Hot water from cylinder jacket, used for dyeing purposes	44·5
Chemical heat value of producer gas in holder	81·0	Heat rejected as sensible	18·0
		Balance absorbed in gasification	19·0
	100·0		100·0

The author gave the following particulars of a test made with his producer power-gas plant driving a textile factory:—

Diameter of cylinders	16 in.
Length of stroke	24 ,,
Revolutions per minute	140
Explosions per minute	140
Mean initial pressure	297 lbs.
Mean effective pressure	78 ,,
Indicated horse power	133
Producer gas per hour, main	10,640 c. ft.
Producer gas per indicated horse power per hour, main	80 ,,
Coke used per indicated horse power per hour	0·99 lb.
Actual carbon used, after deducting 15 per cent. of ash	0·74 ,,

The author closed his paper with the following remarks: Outside the question of thermal efficiency, there is a duty for all of us, and one that has hitherto been altogether neglected, but which it is a crime against natural laws to overlook. It consists in preventing, as far as it is possible, the smoke pollution of the atmosphere, a product of imperfect combustion. We all know that carbon completely oxidized to carbon dioxide by the process of combustion is in a condition suitable for absorption by the vegetable world, and supplies one link in the endless chain of Nature's wonderful scheme of the conservation of energy. But, on the other hand, carbon dioxide gas, the result of the partial or incomplete oxidation of carbon, cannot be assimilated by vegetation, and is, moreover, a poisonous gas. Now, one of the greatest disadvantages associated with steam power is the fact that it is responsible for the major part of the atmospheric pollution which is proceeding day and night throughout manufacturing centres. The more or less complete removal of this is one of the advantages that can be claimed for gas power. The admirable Otto-Lenoir cycle of a modern gas-engine, in which the gas and air are drawn into the cylinder together, and are there compressed to a high degree before being ignited, secures ideal combustion conditions; and the result is that the exhaust gases of any well-designed engine indicate on analysis that more or less complete combustion is being obtained all through ordinary working conditions, and this almost independently of expert supervision.

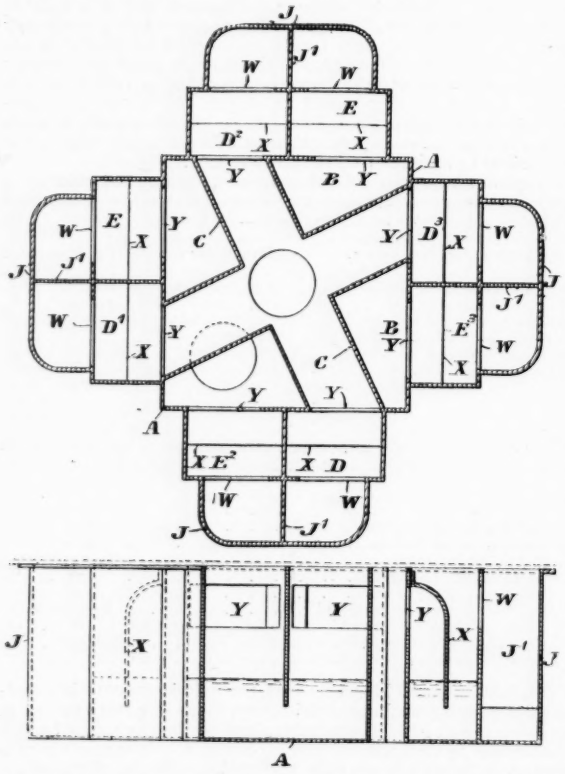
Accompanying the paper were diagrams showing the author's complete arrangement of gas plant using bituminous coal; his 500-horse power gas-generator for driving textile gas-engines; and his 1500-horse power producer-gas engine.

REGISTER OF PATENTS.

Centre Valves for Gas-Purifiers.—Pickering, W. S., and Grove, H., of Exeter. No. 1442; Jan. 20, 1903.

This invention relates to a modification of the "Pickering" valve, (patent No. 7087 of 1902), and has for its object "while providing a valve of simple construction for direct attachment to the purifier casing, and while obviating the employment of independent connections therewith, to provide a valve in which separate controlling valves for the inlet and outlet of each of the compartments of the purifier are dispensed with, and in which the course of the gases is altered as required, by hydraulic means."

The inlet and outlet chambers pertaining to the respective compartments of the purifier are provided with a partition which divides the chambers into two compartments, one of which is open to the main inlet chamber, or the main outlet chamber as the case may be, while the other is open to a connecting chamber or hood, by means of which communication is made between the outlet of one purifier compartment and the inlet of the next in the series—the connecting chamber or hood being also provided with a vertical partition. The partitions in the respective inlet and outlet chambers and in the connecting hoods or chambers extend short of the full height of the chambers, so that a communicating aperture is provided at the lower part. Means are also provided for the admission of a quantity of water or other liquid to fill the lower part of the inlet and outlet chambers, or to fill the lower part of the connecting hoods or chambers when it is desired to cut off communication between the inlet and outlet chamber of the respective compartments and the main inlet and main outlet chambers, and when it is desired to cut off communication between the outlet of one purifier compartment and the inlet of the next.



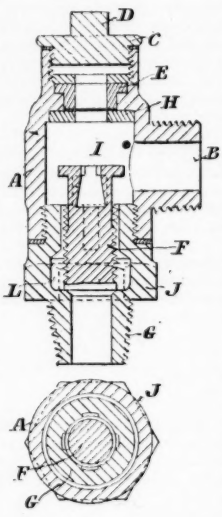
Five different arrangements are illustrated and described in the specification. In the one selected for reproduction, the main valve casing A is made of a rectangular form; the main part of the casing forming the main inlet chamber B, while a diagonal tubular casing C is provided within the main casing to serve as the main outlet chamber in substantially the same manner as in the principal modification described in the earlier patent already referred to. Combined inlet chambers E, E^1, E^2, and E^3 and outlet chambers D, D^1, D^2, and D^3 are provided upon each of the four sides of the main casing, which chambers respectively communicate with the main inlet chamber B and the main outlet chamber C by apertures Y provided towards the top of the vertical walls of the main inlet chamber. Each inlet and outlet chamber (such as E and D) is provided with a vertical partition X, which stops short of running the full height of the chamber, so as thus to provide sufficient space towards the bottom of the chambers for communication between the respective sides of the partition. The associated inlet and outlet chambers on each side are connected together by a chamber or hood J, within which a vertical partition J^1 is also provided, which falls short of the full height of the chamber and provides a space towards the bottom for communication between each compartment of the connecting hood or chamber. Communication is made between the respective inlet and outlet chambers and their respective hoods or chambers by apertures W provided towards the top of the walls which separate them.

Thus, on water being supplied to the associated inlet and outlet chambers, it rises above the lower edge of the dividing partition X, so that communication with the main inlet and main outlet chambers is cut off, and the gases passing into one outlet chamber flow through to the corresponding connecting hood or chamber J and under the dividing partition J^1 into the inlet chamber of the next purifier compartment in the series.

When it is desired to cut out one of the purifier compartments, it is only necessary to flood two connecting hoods, together with the inlet and outlet chambers of the compartment to be cut out, and discharge the inlet chamber of the compartment to be worked first and the outlet chamber of the one last worked. In this way, the purified gas, instead of passing through the compartment, comes direct into the main outlet chamber, and unpurified gas passes from the main inlet chamber to the inlet chamber of the next compartment of the series.

Valves for Use in Connection with Apparatus for Drilling and Tapping Mains under Pressure.—Preston, E. J., of Deptford, and Jakeman, G. E., of Peckham Rye. No. 9427; April 25, 1903.

The patentees' object is to facilitate the drilling and tapping of mains under pressure, so that unskilled labour may be employed—superseding such constructions as are described in patents No. 5380 of 1882 and No. 24,625 of 1895. In the use of such arrangements a difficulty is often experienced because the beginning of the thread on the bottom or tail-piece must be made to correspond exactly with the beginning of the thread on the body or ferrule into which the tail-piece is to be screwed before the plug or valve can be unscrewed or raised into the body. The present inventors, therefore, propose to provide a T-shaped body or casting having a lateral outlet for the branch connecting pipe, and which is closed at the top by a screw stopper and provided with a cup leather, through which can be inserted a key for opening and closing the valve. This latter is in the form of a long plug screwed at its lower end, where it can seat itself against a seat formed in the tail or lower part of a ferrule, the upper end of which is united to the T-shaped casting; the plug being formed at its upper end with a flange which can seat itself against a leather washer provided in the upper part of the T-piece. This plug is also formed with a recess in its upper end forming a bayonet joint, and the key has two projecting lugs at the bottom which engage in the recess, so that the key cannot be blown out by the pressure during the operation of opening and closing. Grooves are formed in the interior thread of the ferrule for providing a way from the main to the branch on the T-piece; or, instead of the grooves, there may be one or more lateral passages.



A is a T-shaped body or casting having a lateral outlet B for the branch connecting-pipe, and which is closed at the top by a screw stopper C with a square D or square recess for a spanner or key, and provided with a cup leather E for ensuring a fluid-tight joint during the opening and closing of the valve. This latter is in the form of a long plug F screwed at the lower end, where it can seat itself against a seat formed in the tail or lower part of a ferrule G, the upper end of which is screwed into the T-piece. The plug F is formed at its upper end with a flange or face which can seat itself on a leather washer H against an inner flange in the top of the T-piece. This plug is also made with a recess I in its upper end, forming a bayonet joint; and the key has two projecting lugs at the bottom, which engage in the recess, so that the key cannot be blown out by the pressure during the operation of opening and closing.

The lower part of the furrule G is screwed outside for screwing into the main, and (as stated) screwed outside at its upper end; a hexagon part J between the two threads being provided for a spanner for screwing the apparatus into the main. Above the valve seat, the interior of the ferrule is formed with an interrupted screw-thread—say, four screwed ribs—into which the plug is screwed, leaving four intermediate grooves. Thus, when the plug is slightly raised from its seat, a full way is obtained by way of the grooves into the T-shaped body or casting A, and thence into the branch outlet B. When the plug is raised fully, its upper end surface makes joint with the leather washer H or other seating. The plug is by preference of such a length that it has only to be raised slightly above its seat for making joint at the top; thus shortening the operation of opening and closing.

Recovery of the Residual Products Obtained in the Purification of Coal Gas.—Gutknecht, H., of Zürich, Switzerland. No. 9396; April 25, 1903.

In the process which forms the subject-matter of this invention, it is proposed first of all to free the ammoniacal liquor from sulphuretted hydrogen and the cyanides by oxidation, which may be accomplished by electrolysis (forming persulphates) or by mixing with it metallic compounds. The simplest way is to add a solution of sulphate of iron—such as sulphate of the oxide or protoxide of iron—in just sufficient quantity for the precipitation of the sulphuretted hydrogen and the cyanides. The quantity required for the purpose can be ascertained analytically by means of a solution of sulphate of copper of known strength. The volatile constituents of the liquor thus treated are now, with the exception of phenol, practically only carbonic acid and ammonia, and the liquor may be used once more in the washer. It is better, however, the patentee remarks, to precipitate the carbonic acid by the addition of milk of lime. If an excess of the latter be employed, gypsum (sulphate of lime) is also precipitated, and the liquor is made richer in

caustic ammonia. After the precipitate has settled, the clear liquor is run off by a syphon or tap and used in the washer, "in which it extracts from the gas all its sulphuretted hydrogen as well as carbonic acid and the cyanides, thereafter being treated again as above described."

When more of the purified ammoniacal liquor accumulates than is required for washing purposes, it is stored until there is enough of it to repay the following further treatment. It is introduced into a tank in which the lime precipitate above referred to has been placed, and more gypsum (unburnt, ground gypsum, or waste gypsum from chemical works) is added in sufficient quantity for all the ammonia combined with the sulphuric acid contained in the gypsum. The contents of the tank are well stirred, or, better, furnace gases, as free from soot as possible, are blown through, so that any free ammonia combines with the carbonic acid in the gases and is transformed into carbonate. After about two hours stirring, all the ammonia will be combined with the sulphuric acid and any other strong acids—such as hydrochloric acid or sulphocyanic acid—which may be present (having been produced in the distillation or otherwise); the combination being chiefly according to the equation:

$$(NH_4)_2\,CO_3 + CaSO_4 = (NH_4)_2\,SO_4 + CaCO_3.$$

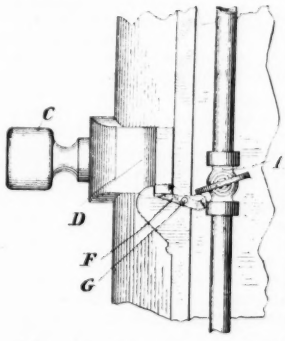
As will be observed, the sulphuric acid of the sulphate of iron previously precipitated by means of the lime is not lost.

All the ammonia salts being now fixed by strong acids, the lime sediment is removed by filtration, and the brine of the salts is conducted into a special tank. A part of this liquid is useful for a final washing of the gas in order to recover the last traces of ammonia which may have escaped the washing already referred to. The other portion is concentrated by evaporation in open lead pans; and the resultant salts may be utilized, either wholly or after the extraction of the sulphocyanide of ammonium, which can be turned to account separately, as manure.

The precipitate of sulphide of iron, &c., is pressed and exposed to the air, when self-oxidation quickly takes place. It is then placed in a solution of sulphuric acid of about 35 to 40 per cent. strength, which is heated to a temperature of over 102° C. (preferably about 110° C.), whereby the oxide of iron is set free, the cyanides are entirely transformed into prussian blue, and the sulphur is separated. The sulphate of iron, after being filtered off, is ready for use again. The prussian blue is decomposed by means of a solution of carbonate of sodium or potassium, and the ferrocyanide recovered either in substance or as prussian blue; and, finally, the sulphur, after being purified by means of acids, is re-melted.

Gas-Cookers.—Green, W. O., of Brentford. No. 10,931; May 13, 1903.

The object of this invention is to automatically open the door of a gas cooking-range at the same time as the tap is being turned on to supply gas to the burners within.



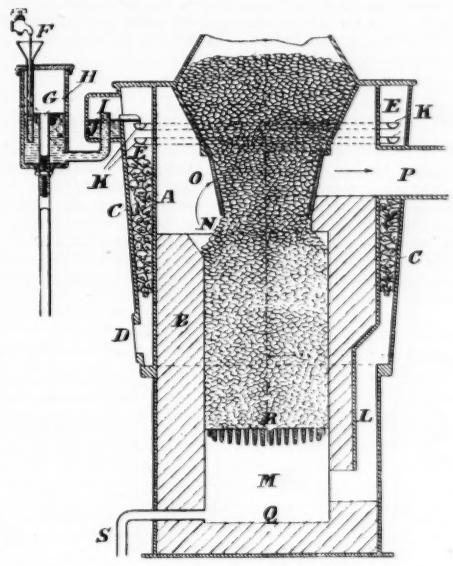
The tap A is situate at the side of the range near the handle C and catch D of the door. Near the edge there is pivoted a lug F, having a position on one side of the pivot G just under the catch and at the other side of the pivot G in proximity to the handle of the gas-tap. So that when D is in the position shown, the lug F will be held in place by the catch; but when it is desired to turn the gas on, the handle acts on the end of the lug, and, forcing up the other end, will lift the catch and free the door, which will fly open under the action of a spring, or by the construction of the hinges (rising and falling), and thus indicate that the gas is turned on. The tap can now be urther turned on to any degree, and the gas lighted, after which the door can be shut without interfering with the handle of the tap, and the tap can be turned off without interfering with the door by reason of the handle operating the lug F in the opposite direction. But after the gas is turned off, it cannot be turned on again without opening the door.

Gas-Generators.—Dowson, J. E., of Victoria Street, S.W. No. 13,476; June 16, 1903.

This invention relates to gas-generators in which air is drawn in by the suction of an engine, or by a fan, or by other suitable means. Preferably the air is heated before it reaches the fuel in the generator; and to do this, all or a portion of the generator has a double casing—the air being drawn or forced through the enclosed space between the two casings. Essential parts of this invention are "the method by which the steam necessary for making the gas is produced, and the automatic regulation and control of the quantity of water supplied and evaporated, to suit variations in the rate at which gas is produced, so that the composition of the gas is nearly constant."

As shown, the generator is partly lined with fire-bricks or other suitable materials; an outer casing C, with air inlet D, and space E containing loose pieces of iron or other suitable material. There is a water supply F to the chamber G, with an overflow H and outlet I. When air is drawn into the generator by the action of the engine connected with it, the air pressure in the chamber J is reduced, and water is thereby caused to flow through the outlet I from the chamber G, where the pressure is momentarily in excess. The water thus admitted into the chamber J flows to one or more channels K, where it is evaporated, and the steam mixes with the heated air in the enclosed space E. If any excess of water falls from the channels K, or from the ring of piping or inclined planes, it will fall on the loose pieces of iron or other material in the enclosed space E, and will then be evaporated by coming in contact with heated surfaces.

When air is forced into the generator by means of a blower or pump, or other suitable means, the overflow H is raised so that the head of water in the chamber G is sufficient to overcome the pressure caused by the blower or pump in the chamber J. The heated air and the water vapour formed in the enclosed space E pass downwards through the passage L to the lower part of the generator M, and thence upwards through the fire. The gas formed leaves the fire at N; and after passing through the passage O, round the fuel container, it leaves the generator at P.



When the generator is worked by the suction of an engine, the level of the water in G can be regulated by the height of the overflow H, so that none will enter the generator until the engine sucks, and then it will automatically draw in the quantity of water required to be vaporized. In this way, the quantity of water admitted and the quantity of steam produced, are governed by the engine, and are in proportion to the amount of gas produced in the generator.

An overflow for any excess of water is provided at S.

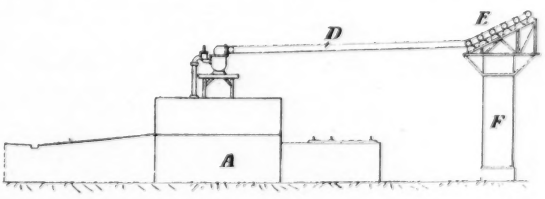
Discharging Coke from Through Gas-Retorts.—De Brouwer, J., of Bruges. No. 14,089; June 24, 1903.

Full particulars of this invention appear on p. 440 of the present issue of the "JOURNAL."

Recovery of Bye-Products in Processes of Destructive Distillation.—The Otto-Hilgenstock Coke-Oven Company, Limited; a communication from Dr. C. Otto and Co., of Dahlhausen a/Ruhr, Germany. No. 16,005; July 20, 1903.

In the manufacture of coke, coal gas, and like processes of destructive distillation, the system of condensation, the patentees point out, has hitherto been such that the products of distillation have been condensed in a downwardly sloping direction, and outlets, closed by water-seals or the like, have been provided at intervals in the condensing system, to allow of the withdrawal of the condensed products. By the present invention, the condensing system is upwardly sloped for a suitable distance determined by the nature of the products and of the process of distillation.

For example, in coke manufacture the upward incline may advantageously extend from the hydraulic main or other exit from the coke-oven to a point at which the temperature of the gases is below the boiling point of water—say, 70° to 80° C. Thus the whole of the distillate which is condensed at temperatures above this temperature flows back towards the oven or retort, and is subjected to the action of the hot ascending gases; so that a better separation of the products is obtained. The gas-liquor, in thus flowing back, is so far freed from free ammonia that it may subsequently be used for washing this constituent from the gas.



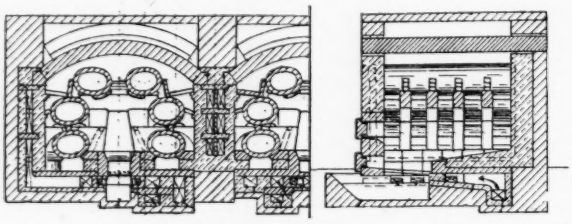
A suitable apparatus for this method of condensation consists of an upwardly inclined pipe D, extending from the oven or retort A, and terminating in an air-condenser E of an ordinary type, except that it is so inclined that the condensed products will flow back. This condenser may conveniently be supported on water coolers F, into which its delivery end opens. In an apparatus of this kind, the products condensed in the air-condenser, and therefore caused to flow back, are subjected to the action of the hot gases passing up the condenser. The

lighter constituents of the tar and the free ammonia in the liquor, and the major portion of the condensed water, are thus volatilized again, and carried forward, "with the result that they can afterwards be more easily separated from the gas than if the condensed products were allowed to flow downwards away from the oven and removed through seals at intervals—particularly if the products issuing from the higher end of the condenser are at once rapidly cooled in a water-cooler."

Less washing water is said to be necessary, involving a considerable saving of plant. A further effect of the invention is that the tar gets more thoroughly washed by the water that condenses, so that the tar in the hydraulic main retains less ammoniacal salts. Moreover, the cooling of the products of distillation is more uniform than when the condensation occurs in a downward direction.

Gas-Retort Furnaces. — Deegen, A., of Wittstock, Germany. No. 22,946; Oct. 23, 1903.

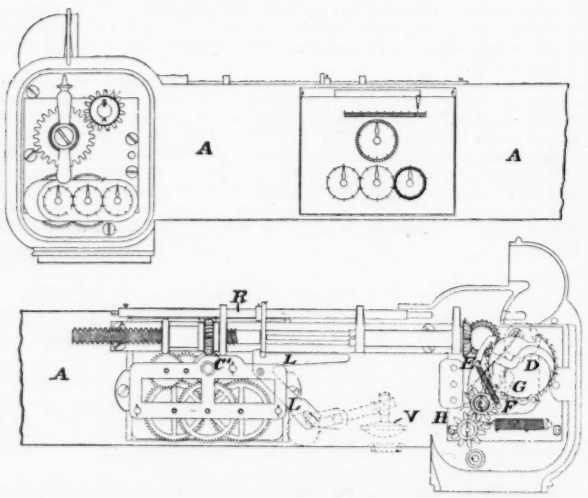
In gas-retort furnaces as hitherto constructed, the patentee points out, the channels or flues for heating the air supply for combustion have been generally arranged in the foundations of the furnace; and when highly heated combustion air is to be conveyed to the furnace gases, this construction depends on a deep underground water level—"otherwise the construction cannot be carried out at all, or at least is so difficult and expensive that the advantages of previously heating the combustion air cannot balance the disadvantages."



The present invention relates to an arrangement of the channels or flues (as shown) for previously heating the combustion air, and has for its object to allow its being carried out under the most unfavourable underground conditions. A further subject matter of the invention is at the same time to isolate and cool the walls of the furnaces arranged close to each other, so that it is impossible for the flues to become cracked. A renewal of the flues therefore is only necessary when the furnace case itself has to be renewed. The arrangement is characterized in that flues subdivided by partition walls are arranged in the furnace pillars, or the longitudinal and partition walls of the furnace which support the furnace vault, for the purpose of preparatory heating the so-called upper-air supply—*i.e.*, the air conveyed into the fire-gases arising from the grate; while the so-called lower air-flues (the channel conveying the preparatory heated combustion air underneath the grate) are arranged in the lower part of the furnace.

Coin-Freed Gas-Meters.—Tourtel, J. M., of Queen Victoria Street, E.C. No. 3177; Feb. 9, 1904.

This invention relates to improvements in coin-freed prepayment gas-meters, whereby the coin-freed apparatus is rendered more compact, more accurate in its action, and more easily detached from, and replaced on, the meter. A considerable number of parts employed are similar to, or improvements on, those described in patents No. 14,122 of 1894, No. 14,198 of 1895, and No. 8644 of 1896.



The attachment is mounted on a plate A, which is dropped into the top of the meter, where it is held in position by a projecting strip on the meter case, by a projecting ridge, and by the meter top—provided with sealing rings, secured to the plate A by screws within the sealing rings. By simply unfastening the screws and taking off the meter top, the complete apparatus can be removed and replaced. The plate A is so shaped and curved that it partly covers the coin-operator; while a second curved plate, secured to A by screws, completes the covering of the coin-operator, and forms a box to contain it.

D is the coin-disc, provided with a slot through which smaller coins than those required to operate the apparatus pass freely, while coins of the required size are retained. The coin-disc is provided with ratchet teeth for a portion of its periphery. E is a lever, which acts partly as a non-return catch or pawl by engaging with the teeth of the coin-disc, and partly as a locking catch for the coin-disc by engaging in a recess provided at the top of the coin-disc when the latter is rotated without a coin having been previously inserted. F is a lever connected by a spring to the lever E. Both levers are pressed against the periphery of the coin-disc by a spring. A pin projecting from the lever F is normally pressing against the periphery of the coin-disc; but when the latter is turned, the pin eventually enters a cam-shaped groove in the face of the coin-disc. The continued rotation of the coin-disc causes the pin to traverse the groove, thus forcing out the coin which projects into the groove, after which the pin resumes its position against the periphery of the coin-disc.

A bell-crank lever G has its lower arm attached to a spring, which keeps the upper arm of the lever pressed against a fixed stop. When the coin-disc is in its normal position, a projection rests against the upper arm of the lever G; and if the coin-disc is rotated without the previous insertion of a coin, the projection presses down the lever G until the lever E is brought into the recess. Upon releasing the handle, the spring causes the lever G to bring back the coin-disc to its normal position. If a coin has been previously inserted through the coin-slot into the coin-disc, then, upon rotating the coin-disc, the coin lifts the lever E clear of the recess, and eventually the projection escapes from the lever G, which springs back to its normal position, while a continuation of the rotation brings the coin-disc back to its normal position.

During the rotation, a projection of the coin disc (not shown) engages with the teeth of the wheel H, and actuates a coin-counter. A spring engaging with the teeth of the wheel retains its position.

Upon operating the coin-disc, the measuring-out screw shown causes the rod R, through its forked piece, to move in the same direction; and as it is in engagement with the slot of the lever L, it moves this lever and causes it to open a supply valve V (shown dotted). If a number of coins are successively inserted into the apparatus, the rod R will continue to travel in the same direction until it eventually enters a groove in the coin-shoot, and it will ultimately project within the coin-shoot and prevent the insertion of any further coins.

As gas is supplied through the meter, the wheels of the index revolve, and with them the worm C, which will thus turn the threaded wheel shown, and cause the measuring-out screw to be gradually withdrawn from within the sleeve. At the same time, the rod R will be drawn backwards and thus remove the obstruction to the passage of coins through the coin-shoot, and eventually the forked piece re-engages with the slot of the lever L and closes the supply valve V.

From the above description, it will be seen that the entire apparatus constituting the prepayment attachment (but excepting the parts affecting the supply valve which are shown in dotted lines) is mounted upon one plate; and the whole attachment is arranged to be readily detached from the meter by merely removing the meter top.

APPLICATIONS FOR LETTERS PATENT.

10,006.—Marks, G. C., "Inverted incandescent alcohol burners." May 2. A communication from La Société Romanet et Guilbert et Alphonse Guenet.

10,052.—Ehrsam, M., "Gas-cookers." May 2.

10,061.—Belyea, A. U., "Burner protector." May 2.

10,091.—Webster, G., Bickerton, R. G., and Gunnill, J., "Two-cycle internal combustion engine." May 3.

10,093-4.—Reese, L. C., "Heating by gas." May 3.

10,123.—Addicks, W. R., "Carburetted water gas." May 3.

10,162.—Steel, M., and Thornton, R., "Carburetting air or gas." May 3.

10,233.—Thwaite, B. H., "Gas engines." May 4.

10,285.—The Economic Safety Gas Company, Ltd., and Glasscoe, T. H., "Carburetting air for illuminating and heating purposes." May 4.

10,292.—Ashcroft, A., and Collins, H., "Burning gas." May 5.

10,317.—Arculus, E. A., and Wigley, P., "Incandescent lamps." May 5.

10,328.—Mayer, K., "Mantle carriers." May 5.

10,329.—Thielenhaus, F. W., Vollmann, C., and Evertz, W., "Street gas-lamps." May 5.

10,344.—Gerdes, H., "Gas-producers." May 5.

10,384.—Bradley, H. W., Bickerton, H. N., and Clerk, D., "Gas-engines." May 5.

10,402.—Rotherham, H., "Detector lock for gas and water connections." May 6.

10,409-10.—Docherty, H. F., Peyton, E. G., and Craig, A. M., "Production of acetylene." May 6.

10,455.—Struthers, J., "Distribution of water and gas." May 6.

10,484.—Holmes, E. D., "Charging retorts." May 6.

10,538.—Alsop, J. N., "Generating a gaseous medium from air." May 7.

10,552.—Altman, J., "Inverted incandescent lamps." May 7.

10,555.—Hartley, J., "Holder for mantle-rods." May 7.

10,564.—Delassue, J., "Gas-generators." May 7.

Aiding the Rates at Nottingham.—"One of the rocks on which our financial solvency depends," is the description accorded to the Nottingham gas undertaking by the Chairman of the Finance Committee (Dr. Fraser). This well-earned compliment was paid in connection with a proposal that the works should contribute £28,300 in aid of the rates, as compared with £24,000 last year. Dr. Fraser remarked that he did not think the Chairman of the Gas Committee (Alderman Ford) would object to this course, as there was every reason to believe that the gas-works were doing extremely well.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Bucket Hot-Coke Conveyor and Steam Exhauster.

SIR,—In your last issue, I read a most interesting article under this heading, and notice you mention the fact that the plant has been running at Toronto since September, 1902.

I wish to say that in 1900 I took out a patent (No. 11,979) for the exhaustion of steam from conveyor troughs, and since that date have made considerable experiments at our works with a conveyor 30 feet long (which has been inspected by hundreds of engineers), and brought the same to a successful issue.

At the Nanterre Gas-Works, near Paris, we have just completed a large hot-coke conveying plant under these patents, including the complete exhaustion of the steam from the trough and from the retort-house.

Now that the question of the exhaustion of the steam and fumes from retort-houses is becoming appreciated by gas engineers, it will be interesting for them to pay a visit of inspection, and see this plant in operation.

Leeds, May 13, 1904. MAURICE GRAHAM.

[Our correspondent is the Contractor referred to in the final sentences of last week's article, which read: "The exhaustion of the steam arising from the quenching of hot coke is a practice that has not yet come into vogue in this country; but one home retort-house plant contractor we know has designed an arrangement for this purpose."—ED. J. G. L.]

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

The following further progress has been made with Bills:—

Bills brought from the Commons, read the first time, and referred to the Examiners: Crystal Palace District Gas Bill, Doncaster Corporation Bill.

Bills reported: Amersham, Beaconsfield, and District Water Bill, Brixham Gas Bill, Chippenham Gas Bill, Croydon Gas Bill.

Bills read the third time and passed: Blyth and Cowpen Gas Bill, Minehead Urban District Council Water Bill, Ryde Gas Bill, Whitby Gas Bill.

The opposition to the Chippenham, Sheppy, and South Shields Gas Bills has been withdrawn.

Petitions have been presented against the following Bills: The Barnet District Gas and Water Bill, by (among others) the Hertfordshire and Middlesex County Councils, the Metropolitan Water Board, the Finchley Urban District Council, and the Hertford and Hatfield Rural District Councils; Electric Lighting Provisional Orders Bill (No. 2), by the Bath, Brentford, and Southampton Gas Companies, in respect of the Bath, Hanwell, and Eastleigh and Basingstoke Orders; Electric Lighting Provisional Orders Bill (No. 3), by the Longwood Gas Company, in respect of the Huddersfield Order; Gas Orders Confirmation Bill (No. 1), by the Bognor Urban District Council, in respect of the Bognor Gas Order.

HOUSE OF COMMONS.

The following further progress has been made with Bills:—

Bills brought from the Lords, read the first time, and referred to the Examiners: Minehead Urban District Council Water Bill.

Bills read a second time and committed: Barnard Castle Gas Bill [Lords], Ebbw Vale Urban District Water Bill [Lords], Local Government Provisional Orders (Gas) Bill, Lytham Improvement Bill.

Bill reported: Yorktown and Blackwater Gas Bill [Lords].

Bill read the third time and passed: Crystal Palace District Gas Bill [new title].

Incandescent Gas Lighting at Chelsea.—The Chelsea Borough Council decided, at their meeting on Wednesday, to extend the system of incandescent gas lighting to a number of streets, at an estimated cost of £1000 for burners and new lamps.

Public Lighting at Liskeard.—Considerable discussion took place at a meeting of the Liskeard Town Council last Tuesday with reference to the lighting of the streets. The Highways and Lighting Committee recommended that a contract should be entered into with the Gas Company for the lighting of the public lamps during the next year, at prices varying from £2 14s. to £3 5s. per lamp, according to the hours of extinguishing. Several members of the Council advocated the adoption of incandescent burners in all the lamps; and it was suggested that the Corporation should provide the burners and mantles and pay the Company for the gas consumed by meter. The Committee explained that it was impossible to get better terms than those recommended; the Company having given them their lowest rates. The report was adopted. A Committee was, however, appointed to consider the suggestion as to incandescent lighting, and to make experiments with reference to the consumption of gas with various burners.

GLEANINGS FROM THE COMMITTEE ROOMS.

Alterations in the Prepayment Meter Clauses.

THE past week in the Committee rooms has not been without its interesting features. It will be seen that the prepayment meter clauses have been considerably strengthened in favour of the gas suppliers. From the opening of the discussion on these clauses, it has been admitted that they contain certain weaknesses that rendered them unfair to many vendors of gas under the coin-meter system; and the modifications from the original which the Chippenham clauses contain largely remedy these. It is a matter worthy of note that the prepayment meter clauses have not been applied in the case of Croydon; the Company having satisfied the Lord Chairman that there is a distinct difference between the system on which they work "stop" meters—a fixed rent no matter what the consumption is—and the excess charge made on every 1000 cubic feet of gas sent through slot meters. The recognition of this difference by Parliament is very satisfactory. The Bill was before Lord Balfour of Burleigh last Tuesday, and after Mr. Corbet Woodall had attested the truth of the preamble, it was without discussion ordered to be reported for third reading. The hostility to the South Shields Bill and the Sheppy Bill has been withdrawn; and they are now in the unopposed lists. The Ilford Gas Company have secured a clause on the lines of the Bermondsey one in the Ilford District Council's Bill. A report of the proceedings which resulted so favourably for the Company is given next page. The Amersham, Beaconsfield, and District Water Bill has gone through the Unopposed Committee of the Lords.

A Variation of the Derby Clause—Discounts.

Among the several measures which came on Thursday last before the Unopposed Bills Committee of the House of Commons (over which Mr. Jeffreys presided) was the one promoted by the Yorktown and Blackwater Gas Company. The principal objects are incorporation as a limited Company, extension of area into Sandhurst and Crowthorne, sanction to the raising of £38,000 of additional capital, and powers enabling the construction of a small railway siding. The preamble of the Bill was declared true by Mr. J. Cufflin, one of the Directors. The case was conducted by Mr. F. J. Crowther (of Messrs. Hargreaves and Co., the Parliamentary Agents), who stated the foregoing facts, and mentioned that the standard price had been reduced from 4s. 9d. to 4s. 3d. per 1000 cubic feet by arrangement with Frimley. Then he touched a question around which there was an interesting discussion. He stated that the Derby prepayment meter clause was inserted in the House of Lords; but it was understood that, if there was any modification of the clause, they should be allowed to adopt it in the Bill. There had been a modification; and so they had adopted it. This drew, for the benefit of the Committee, an explanation from Sir Chandos Leigh. From this, it appeared that Sir Chandos has not the least objection to the 10d. excess for supplies under the prepayment system; but what he has objected to all through is that the maximum charge for the hire of a slot meter without fittings should be at the rate of 10 per cent. per annum. He does not like this, because it would involve a special collection, which might be most inconvenient. He has therefore suggested, and it has (as mentioned more fully hereafter) been adopted in the Chippenham case, that, with an excess of 10d. for a prepayment meter and fittings, there shall be a fixed sum charged for a slot meter in those cases where fittings are not required. Sir Chandos said it seemed that Lord Balfour of Burleigh had rather come round to his opinion in this matter. The question he now raised was whether the charge for the meter without fittings should be 5d. or 6d. His feeling was that it should be 5d., or half the 10d. Mr. Crowther urged that the Chippenham case was the precedent; and there 6d. was allowed by the House of Commons. Sir Chandos was curious as to how the 6d. was arrived at. In the discussion which followed it was stated by Mr. John Meiklejohn, the Engineer and Manager of the Yorktown Company, that they have not yet largely developed the prepayment system. They have only about 300 prepayment consumers, and there have been only two applications for meters without fittings. They are charging at the present time 4d. on the price of gas. Here it was pointed out by Mr. Crowther that, if a reduction was made in the price of gas, 5d. for a meter without fittings would only give them a margin of a 1d.; so that, if the price of gas were lowered 2d., they would have to alter the whole of these meters. The clause with the 10d. and 6d. was allowed to stand. The discount clause in the Bill has been altered to the same form as one to which Sir Chandos Leigh recently took some exception. It now reads—

> The Company may, if they think fit, allow discounts or rebates to consumers of gas, not exceeding in any case 10 per cent., in consideration of prompt payment of gas-rents, and in addition thereto not exceeding 15 per cent. to large consumers upon such scale and subject to such conditions and regulations as may be prescribed by special contract in writing between the Company and any of such consumers: Provided that notice of the effect of this enactment shall be endorsed on every demand note for gas-rent; provided also that such discounts or rebates shall be of equal amount, under like circumstances, to all consumers.

The Bill was ordered to be reported for third reading.

Steam-Rollers and the Depth of Gas-Pipes.

The Chippenham Gas Company have, under the pressure of a great public body—to wit, the Wiltshire County Council—and to avoid expense in a contest, created a precedent in connection with the depth at which gas-pipes must be laid, within which depth the road authority are absolved from liability in respect of any injury caused by the use of a steam-roller. The insertion of clauses in their Bill dealing with this matter has come about in this manner. The Wiltshire County Council opposed the Bill in the House of Commons, and asked for some extraordinary things in regard to their own protection in relation to the Company's distribution system. The Company conceded an extension from three to seven days of the notice required to be given by them to the Council under section 8 of the Gas-Works Clauses Act, 1847; but a request that all responsibility should be thrown on the Gas Company for any damage to their mains by reason

of the use of the Council's steam-rollers was a bit too much for the Commons Committee, who were of opinion that the Council were safeguarded as far as was requisite under the General Acts. Well, now, notwithstanding that the matter was well threshed out before the Committee in the Commons, and notwithstanding, too, the very definite opinion of the latter on the subject, the County Council petitioned against the Company's Bill in the Lords, and sought the same defence against being mulct in damage on account of any injury inflicted by their own steam-rollers. It is a great pity that there is not some power to stay the oppressive and high-handed proceedings of these large public bodies (which in some cases such as this amount to nothing short of persecution) in order to gain specially and unusually favourable ends. Their opposition to the Bill was all that the Company had to meet in the Lords; and it was not considered worth while encountering it if it could be settled by concession. Had there been hostility on other points from any other source, the advisers of the Company would not by any means have knuckled down in this matter to the County Council. At the same time, the clauses that have been agreed upon are not very stringent; and the Company are not likely to be wanting to lay pipes at a less depth than that specified. However, the clauses agreed upon are to the effect that neither the Council nor any body or person repairing, on their behalf, any main road within the limits of supply, shall be liable to the Company for any damage which may be done to any of the pipes or other works of the Company laid or constructed after the passing of this Act at a less depth than 2 ft. 6 in. from the surface of the main road, caused by, or resulting from, the reasonable use by, or on behalf of, the Council of any steam-roller or other engine. Provision is made, where a gas-pipe cannot be laid at a sufficient depth over a bridge, main, or pipe, for the pipe to be laid in some other manner to be agreed upon, and for any differences being referred to arbitration. Before the Council make any alterations involving interference with the Company's pipes, they are to give the latter a month's notice; and the Council are to give the Company facilities to prevent any interruption of the gas supply. The agreement between the parties was not arrived at in time to prevent the Bill appearing in one of the groups referred to a Lords Committee. It remained in the list until the early part of last week, but was then withdrawn; and by Thursday it was before Lord Balfour of Burleigh as an unopposed measure. The proceedings, which were purely formal, were conducted by Mr. C. H. W. Johnson (of Messrs. Torr and Co.). Mr. W. A. M'Intosh Valon, Mr. Ernest Drew (of Messrs. Wood, Drew, and Co.), and Mr. W. H. Brinckworth, the Secretary and Manager of the Company, were also present in order to give explanations if required. But none were necessary.

The Chippenham Prepayment Meter Clause. In a preceding paragraph, reference has been made to the variations which have been effected in what has become to be known in the Committee rooms and generally as the Derby prepayment meter clause—for the first time in the Chippenham Bill, and since in the Yorktown Bill. The passing of the Bill (containing these alterations in the clause) for third reading by the Lords—the Bill having already gone through the Commons—makes the clause an accepted fact; and henceforth to facilitate reference, and in order that one may know that the latest thing in the way of a prepayment clause is what is meant, it will have to be known as the Chippenham clause. The Derby clause, it will be remembered, allows an excess of 10d. "for the hire of the meters and fittings used therewith." In the Chippenham clause 2d. additional is allowed for a cooker. Then for the hire of a coin meter, without fittings of any description, instead of a charge of 10 per cent. per annum on the cost of the meter, a level 6d. per 1000 cubic feet is now allowed. So that the Chippenham clause is the Derby one with these two changes. It is a matter of rather frequent occurrence for readers to write for precise references to such clauses as these; and therefore we give intact the clauses, with the alterations as they now appear in the Chippenham Bill. The changes are set out in black type:—

(1) The Company may charge for any gas supplied through a prepayment meter a not greater charge, rate, or rent than for gas supplied to private consumers, within or without the borough of Chippenham as the case may be, through any other kind of meter, or by any other method of supply.

(2) The Company shall not charge for the hire of any prepayment meter and fittings to be used therewith, any sum other than a sum of money calculated according to the quantity of gas supplied through such prepayment meters, and the maximum sum to be so charged shall be at the rate of 10d. per 1000 cubic feet supplied in manner aforesaid, such sum to include the hire of meter and the fittings used therewith; **or at the rate of one shilling per thousand cubic feet including cooker.** The said charge shall include the providing, letting, fixing, repairing, and maintenance of the meter, fittings, **and cooker,** and the cost of collection, and other costs, incurred by the Company in connection with the meter, fittings, **and cooker.**

(3) The maximum charge for the hire of a prepayment meter, without fittings and cooker, **shall be at the rate of sixpence per thousand cubic feet.**

(4) For the purposes of this section, the expression "prepayment meter" means any meter or appliance by which the quantity of gas supplied is regulated according to the amount of money prepaid therefor.

South Shields Bill. The threatened opposition to the South Shields Gas Company's Bill which continued to presage, until the beginning of last week, to those not behind the scenes a second contest in the Lords was fortunately set completely aside by agreement; and the Bill was removed from the consideration of the Committee to which it had been referred. The antagonism was not on vital points in the measure, though the land question is admittedly of great moment to the Company. The Harton Coal Company and the Sunderland and South Shields Water Company were the petitioners, but the latter were easily disposed of. Not so the Coal Company, for they held on until almost the end of the time at which the fight would have had to seriously commence. The agreement entered into with them by the Gas Company is to the effect that the latter may take the Coal Company's land required for railway purposes as granted by the Commons Committee; and, in consideration of this, the Gas Company will effect an exchange and *sell* to the Coal Company an adjoining piece of land. This settlement of the land question is eminently satisfactory to the Gas Company, who, prior to the Committee stage in the Lower House, offered to *give* the larger area of land in exchange for the strips required for the railway, which offer was refused. However, a lot of unnecessary expense was caused by the obstinacy of the Coal Company.

Sheppy Gas Bill. The opposition to the Sheppy Gas Company's Bill all through the piece has been of a character which almost fails of description; those who initiated it being in a position very low down in the scale of interested parties. They appear to have been representing a Company who have purchased land in a part of the Gas Company's present area of supply; and—on paper—they have laid out a nice little seaside place. These parties only sell the land; so that we take it other people will have to develop it into that ideal seaside resort which has been pictured. However, the opponents were beaten in the Lower House; but they presented a similar petition in the Upper House. Consequently the Sheppy Bill was grouped with that of the South Shields Company; and simultaneously with the disappearance of the Shields measure from the opposed list, Sheppy went to. The opponents, of course, had withdrawn; but why, nobody but themselves apparently knows. It appeared from the first petition of these people that it was part of their idea to undertake the provision of water and artificial light on the estate on their own account. When they found the Sheppy Company had the prior right, they threatened that, if the Company did not give up the area, they would oppose the Bill. As no compensation was offered, naturally the Company told them to—well, do their worst. The opponents succeeded in establishing a *locus standi* on a power-gas clause. This clause, however, was only inserted in the Bill on the off-chance of a possible demand from the dockyard; and, as the Company did not set much store by it, they did the correct thing, and relieved the Bill of its presence. They did this the more willingly as the Board of Trade and the Lord Chairman wished to load it with all kinds of restrictions, so that it was not really worth troubling about. Consequently, the hostile petitioners had not solid ground for opposition even in the first instance. But they persisted in the Lower House, and endeavoured to get a time-limit inserted in the Bill. The stupidity of this is shown by the fact that in thirty years the population in the area in question has not increased, and now only amounts to 192; and these are principally scattered agriculturists. They failed to convince the Committee that, even if the land was sold, this would be a guarantee that it would be built upon, or that any development would take place within any limited period; or, if it did, that the Sheppy Company would not meet any demand that would then arise. Therefore, the Committee decided to disallow the petition. Yet they started on the same tactics in the Upper House; but, without doubt, fortunately for them they were well advised to withdraw. What a pity it is that they are not compelled to pay all costs incurred through their action!

GAS v. ELECTRICITY AT ILFORD.

Gas Companies Check Undue Competition.

The Bill promoted by the Ilford Urban District Council to enable them, among other things, to "sell, let on hire, fix, set up, alter, repair, and remove lamps, meters, electric lines, motors, fittings, and apparatus for lighting, motive power, heating, and cooking purposes," was recently considered by a Committee of the House of Lords presided over by Lord Clifford of Chudleigh. The electric lighting clauses were opposed by the Ilford and Barking Gas Companies, on the ground that they would enable the Council to compete unfairly with several undertakings; and Mr. Claude Baggallay, K.C., and Mr. Squarey appeared before the Committee to support the Companies' case. Mr. Wedderburn, K.C., who represented the promoters, explained that they had no authority to supply gas in Ilford. In 1899, they sought to obtain power to buy the undertaking of the Gas Company, and a portion of that of the Barking Company, which supplied Ilford. Parliament declined to grant it; and he feared that ever since the Gas Company had regarded the Council as their natural enemies—none the less because in 1901 the Council started under their Provisional Order to supply electricity. One immediate result was that in Ilford all the public lamps were electric, whereas they had previously burned gas. Many houses were also lit by electricity, which would otherwise be lighted by gas. So that the Council were carrying on their business, so far as the question of light was concerned, in competition with the Gas Company; the result being that the latter desired to check the prosperity of the Council as electric light suppliers. Quoting the details of the opponents' petition, Counsel observed, with regard to competition, that the whole object of Parliament in giving the Council their powers was that they should be used, and it was never intended that they should be handicapped. Of course, there was competition; but in Ilford, as in other places, this had been proved to be a very good thing, because it had made the Gas Company wake up. He put it to their Lordships: Why should the Council, as an electric lighting authority, be crippled for the sake of the Gas Company?

The first witness called on this part of the Bill was Mr. W. C. C. Hawtayne, the Council's Consulting Electrical Engineer, who, in answer to Mr. Vesey Knox, said the electric light undertaking at Ilford was well managed, and had been very successful. The Gas Company opposed at the inquiry on the subject of the loan in which £5000 was included for free wiring; but they did not succeed. Free wiring had been very successful in Ilford, and this was why the Council proposed to extend it. The advantage of it was that a large number of persons who desired to become consumers did not care to face the cost of the initial installation; and free wiring overcame this difficulty. There was an increasing demand for free wiring in the district. A large number of people at Ilford—as many as 40 per cent.—owned the houses in which they lived; and they were a class of persons who would not be likely to incur bad debts with the Council.

In cross-examination by Mr. Squarey, with a view to prove to the Committee, as Counsel explained, that the free-wiring operations of

the Council interfered in an unfair way with the carrying on of the Gas Company's business, witness said he did not suggest that the Company would have appeared before the Committee except to get themselves fairly protected. Asked if he thought the Company desired to cripple the electric light undertaking in any way, he replied that they did not seem to be anxious to develop it. He thought there was plenty of room in Ilford for both the Company and the Council, so long as the competition was fair. If Counsel said the reason the Company were there was because they regarded the competition as unfair, witness supposed it was so. "You see the effect of the Bill, do you not?" said Mr. Squarey. "The Council would have at their backs the whole of the rates of the district; and we are asking their Lordships to say that in future they shall not. If we can get into the Bill a clause like the Bermondsey clause, that would put us in a better position to compete with the Council?" Witness said he did not think so. "Cannot the Council at present practically undersell us? Suppose they chose to supply electricity at rather less than the actual cost?" Witness: "I suppose they could do that; but I don't think the Council would last very long." Replying to Mr. Wedderburn, he considered it would be very unfair, seeing that the Gas Company had power to supply free fittings for slot meter lighting and cooking, if the Council were prohibited from carrying out free wiring,

The Chairman of the Electric Lighting Committee of the Council (Mr. John Bodger) was the next witness. He thought free wiring was a most reasonable provision. The results hitherto had been extraordinarily successful; and he anticipated a very great development of the enterprise if free wiring was continued. As to the Bermondsey clause, he considered it would simply ruin the Ilford Council's undertaking. He added that it was believed the profits of the past year's working would be from £1500 to £1800. In answer to Mr. Squarey, witness declared that the Bermondsey and Willesden clauses would be absolutely unworkable.

The Resident Electrical Engineer to the Council (Mr. A. H. Shaw) gave evidence as to the development of Ilford under the system of free wiring, which had been largely carried out in good middle-class houses; and this closed the case for the promoters on this part of the Bill, except that Mr. Wedderburn adduced evidence from Hansard to prove that in the case of Marylebone the Bermondsey clause was rejected by Parliament without a division.

The next day, the case for the Ilford Gas Company was opened by Mr. Baggallay. He said the point he wished to put before their Lordships was one of principle—a double-barrelled principle—viz., how far unrestricted municipal trading was to be allowed, and how far especially should it be permitted when it was to a certain extent carrried on with money contributed through the rates to the funds of the municipality. There could be no question as to whether it was or was not desirable that local authorities should have electric lighting; and he should not contest for a moment that the best forms of accounts kept were those prescribed by the Board of Trade. But a municipal body such as the Ilford Council could only carry on their undertaking by means of the revenues received from it or from the rates which they could levy, and which were at the back of their powers; and the point which anybody having a business in a district where municipal trading was carried on had to bear in mind was—how far it might be handicapped or prejudiced by the advantage given to its competitor by the power of using the rates, or by the actual use that was made of them. His friend Mr. Wedderburn seemed to think this was a quarrel and a fight between two natural enemies, the result of some rancour left behind because the Local Authority had some years previously opposed the Company. But rancour did not generally rest in the minds of the successful parties; and the Company were successful. They had no rancour; their feeling was simply one of competition. They were competitors, not natural enemies; and all they wanted was that the competition should be fair. Another allegation made was that the Company wished to check the prosperity of the Council; but they did not desire to do anything of the kind. All his clients wanted was to see that the competition was fair, because they had no rates behind them. In conclusion, he asked that the Bill should go forward only on condition that a provision was inserted on the lines of the Bermondsey clause.

At the request of the Committee, Mr. Wedderburn read the clause, and said that if it were inserted, the Council could not contract with their customers to supply light for longer than a year; and if more was charged for current one year than another, they would lose customers, and have to raise the price to those who remained. In the case of Beckenham and the Crystal Palace District Gas Company, the Committee found that the clause was unsound, and not in accordance with commercial principles. The Council used the current very largely for the working of their tramways, and under this clause they would have to revise the prices every year. He asked the Committee to reject it as utterly unworkable.

The room was cleared. After a short deliberation the parties were re-admitted, and the Chairman announced that the Committee had decided to consider a clause on the lines of the Bermondsey clause. Some discussion then arose as to whether the composition of the clause should be dealt with at once, or after the next part of the Bill had been discussed; and it was decided to adopt the latter course. When the matter was again mentioned, Mr. Wedderburn said the promoters had considered the matter, and he did not propose to re-argue it. The Council could not be blind to the exceeding importance of the principle involved; and they felt it would not be possible for them to go into the question in any way, lest it should be said that they had accepted or recognized the clause. Therefore they had determined not to take any part in the discussion.

Barnsley Water Supply.—From a statement presented to the Barnsley Town Council by the Chairman of the Water Committee (Alderman Raley), it appears that the total receipts last year, including interest on investments, were £24,630; and after paying interest and sinking fund charges, the net profit amounted to £13,753, or an increase of £1400. There is an accumulated reserve fund of over £57,000. Next year, however, the sinking fund charges and interest on the new Midhope scheme will have to be met, and will absorb the profit.

LEGAL INTELLIGENCE.

HIGH COURT OF JUSTICE—KING'S BENCH DIVISION.

Monday, May 9.

(*Before the* LORD CHIEF JUSTICE *and Justices* WILLS *and* KENNEDY.)

New River Company v. The Mayor and Corporation of Westminster. Reinstatement of Pavements.

This was an appeal from a decision of Mr. Bros, sitting at Clerkenwell, and came before the Court on a special case stated. The question raised was as to the right of the Local Authority to charge, besides the actual amount expended in reinstating pavements, &c., which had to be opened up for the purposes of the Water Company, a certain amount for supervision. The respondents had claimed from the Company a sum of £89 9s. 8d.—viz., (*a*) £81 6s. 7d. for work actually done, and a certain percentage upon it in respect of maintenance; and (*b*) £8 3s. 1d., being 10 per cent. on the former sum, for superintendence. The learned Magistrate allowed £73 11s. 11d. in respect of the larger amount, disallowing the maintenance charges; and from this there was no appeal. In respect of the smaller sum, he was of opinion that the respondents were entitled to some payment for supervision; but he deferred a decision as to 10 per cent. being the right amount to allow until it had been settled by the Court whether or not he was right in holding that such a charge was legitimate. The question turned on the construction of section 114 of the Metropolis Management Act, 1855.

Mr. COURTHOPE-MUNROE and Mr. JELF appeared for the appellants; Mr. MORTON SMITH represented the respondents.

Mr. JELF pointed out that this was the first time, after fifty years, that it was sought to impose this charge on the water companies, and he submitted that the supervision of these repairs was part of the statutory duty of the Local Authority for the fulfilment of which rates were imposed—the appellants themselves being large ratepayers.

Mr. MORTON SMITH was not called upon to argue the case for the respondents.

The LORD CHIEF JUSTICE, in giving judgment, said to his mind it was a question of fact whether or not the cost of supervision was included in the expense of reinstatement; and the learned Magistrate had held that it was. The appeal must therefore be dismissed.

The other learned Judges concurred.

Mr. COURTHOPE-MUNROE said this was a very important question to the Metropolitan Water Board, who now stood in the place of the various London Water Companies. He was instructed that it would make a difference of £2000 a year in Westminster alone, and there were 28 boroughs within the area affected. He therefore asked leave to appeal.

The application was granted.

HIGH COURT OF JUSTICE—KING'S BENCH DIVISION.

Tuesday, May 10.

(*Before Mr. Justice* CHANNELL.)

Bilston Urban District Council v. Earl of Dudley.

This was a special case stated for the opinion of the Court on the construction of certain sections of two Local Acts.

Mr. MACMORRAN, K.C., and Mr. MOORE appeared for the plaintiffs; Mr. DANCKWERTS, K.C., and Mr. R. J. PARKER represented the defendant.

Mr. MACMORRAN said that by the Bilston Commissioners (Water) Act, 1893, the Commissioners and the Local Board of Health were authorized to supply water within the limits of the Act; and it was provided by section 4 that the limits for the supply of water should include the district of the Commissioners and the area referred to as the "prescribed area." By section 2, the Water-Works Clauses Acts, 1847 and 1863, were, except where expressly varied by the Act of 1893, incorporated with it. The Commissioners were authorized to construct certain water-works, including a "well and pumping-station in the parish of Wombourne." Sub-section 1 of section 10, the marginal note of which was "For the protection of the Seisdon Rural Sanitary Authority," was as follows: "The Commissioners shall, so soon as they have commenced to supply water to the township of Bilston by means of the works by this Act authorized, lay mains and pipes for the purpose of supplying water within and throughout such parts of the parishes of Wombourne, Trysull, and Woodford as are within a radius of one mile from the pumping-station, and also within the village of Trysull as hereinafter defined (which parts, parishes, and villages are in this section referred to as the 'prescribed area')." All these parishes extended to some extent outside that area. The effect of this was that, under section 35 of the Water-Works Clauses Act, 1847, a person was entitled to demand and receive a supply of water on three conditions—first, that he paid the rate prescribed under the Special Act; secondly, that he paid 10 per cent. of the cost of laying all the necessary mains to his place, if there were none in the street adjoining; and, thirdly, that he should enter into an agreement to take the supply of water for at least three years. Here the first proviso was a variation of the general law. The second sub-section set forth as follows: "Subject to the proviso hereinafter contained, the Commissioners shall supply water to the owner or occupier of any house in any part of the parishes of Wombourne, Trysull, and Woodford who shall require the same, and shall be willing to pay for the same at a rate not exceeding 70 per cent. of the amount which would be payable in respect of such house if the same were within the township of Bilston: Provided always that, as regards any house outside the prescribed area, the owner or occupier thereof shall not be entitled

to demand a supply of water under this section unless such owner or occupier shall enter into an agreement binding himself to pay, in addition to the rate aforesaid, an annual sum equivalent to £5 per cent. on the amount of the outlay that may be incurred by the Commissioners in laying the mains and pipes beyond the prescribed area to such house for the purpose of giving such supply." After the passing of the Act, Wombourne was divided into the parishes of Wombourne and Swindon. By the Bilston Improvement Act, 1896, the District Council were authorized to supply water within the limits of the Act; and it was provided that these and the limits of the Act of 1893 should be the district. The Water-Works Clauses Acts were also incorporated. Section 12 of the Act of 1896 specified that "section 10 of the Act of 1893 shall be amended by including within the prescribed area, as defined in that section, the village of Seisdon, and sub-section 2 of that section shall apply to the parish of Himley, in addition to Wombourne, Trysull, and Woodford." The proviso contained in sub-section 2 of section 10 of the Act of 1893 was repealed, and in lieu thereof the following proviso was to have effect: "Provided always that, as regards any house or houses outside the prescribed area, and within the parishes of Wombourne, Swindon, Trysull, and Woodford, the owners or occupiers thereof shall not be entitled to demand a supply of water under section 10 of the Act of 1893 or under this Act, unless such owners or occupiers or the Rural District Council of Seisdon shall enter into an agreement binding themselves or the Council to pay, in addition to the rate specified in the section, an annual sum of money equivalent in the aggregate to £5 per cent. on the amount of the outlay that shall be incurred by the Council in laying the mains and pipes beyond the prescribed area to such houses for the purpose of giving such supply." The defendant was tenant for life of several houses in the parish of Himley, one of which was known as Himley House, and he had required from the plaintiffs a supply of water for it, in accordance with the provisions of the Acts of 1893 and 1896, and was willing to pay for the supply at a rate not exceeding 70 per cent. of the amount which would be payable in respect of the house if it were within the township of Bilston. Plaintiffs contended, and claimed a declaration to the effect, that the defendant was not entitled to demand a supply of water from the plaintiffs unless they were required to cause pipes to be laid down and water to be brought to the part of their limits in which Himley House was situated, by so many owners or occupiers of houses there as would make the aggregate amount of water-rate payable by them annually not less than one-tenth part of the expense of providing and laying down the pipes, and unless they should severally execute an agreement binding themselves to take the supply for three successive years at least. The question for the opinion of the Court was whether, according to the true construction of the Acts of 1893 and 1896, and the Acts incorporated therewith, the defendant was or was not lawfully entitled to demand a supply of water for his house otherwise than subject to the fulfilment of the conditions sought to be imposed by the plaintiffs. The contention on his behalf was that he was entitled to such supply if he was willing to pay the rate mentioned in sub-section 2 of section 10 of the Act of 1893. For the plaintiffs, on the other hand, it was submitted that he was only entitled to a supply on the terms contained in the section 35 of the Water-Works Clauses Act, 1847, which was incorporated with the above-named Acts.

His LORDSHIP said he thought, on the construction of the Acts, the plaintiffs were entitled to a declaration to the effect that the 35th section of the Act of 1847 applied to the parish of Himley. This, in substance, was the declaration the plaintiffs asked for, though in the case stated it was put in another way. Under these circumstances, having regard to an arrangement acknowledged to be existing between the parties, he would make the declaration, and order that there should be no costs on either side.

BOW COUNTY COURT.—Friday, May 13.

(*Before His Honour Judge* SMYLY, K.C.)

Clark v. The Gaslight and Coke Company—An Important Point under the Workmen's Compensation Act.

This was a claim for the revision of an award made under the Workmen's Compensation Act. The case has been frequently before the Court; the facts being as follows: On July 18, 1900, an award of £1 a week was made in favour of the applicant, who, when working as a coal porter for the respondents, was injured, and suffered the loss of the top joints of three fingers of the left hand. His earnings at that time averaged £2 1s. 9d. per week. On April 1, 1901, Judge French reduced the amount awarded to 14s. 9d. per week—the applicant being taken into the service of the Company as a gatekeeper at 27s. weekly, and thereby making up the full amount of £2 1s. 9d. The applicant was dismissed in November, 1902; he having refused to record the time that workmen went through the gate, on the ground that this would be acting as a spy upon them. He then brought an action for wrongful dismissal, when the Jury returned a verdict for the Company. On March 13, 1903, a further application was made to the Court to increase the award from 14s. 9d. to £1, which was refused by Judge Smyly, for the reason that Clark had earned 27s. a week as a watchman in the Company's service; that such employment was not in the nature of a gratuity; that there had been no change in the circumstances since he had ceased to be a watchman in November, 1902; and that there was no evidence that he had tried to get work. The present application was to increase the 14s. 9d. to £1, on the ground that during the last fourteen months Clark had made about 150 unsuccessful applications for work; but, with the exception of a few days in August, he could not procure it.

Mr. W. M. THOMPSON appeared for the applicant; Mr. A. NEILSON (instructed by Messrs. Bedford, Monier-Williams, and Robinson) represented the respondents.

Mr. THOMPSON, having stated the preceding facts, said the Court of Appeal, in the case of *Sherman v. Holliday and Greenwood*, had decided that a workman was entitled to show the Court that he had applied for work, but had failed to get it; and, on the authority of that case, he would call the applicant to prove that he had made about 150 applications for work.

Mr. NEILSON said, with the view of saving time in taking the applicant through the history of the case, he would admit that when the award was reduced to 14s. 9d., the Company took Clark into their service as a watchman. It was common ground that he was discharged from that employment, and brought an action against the Company for wrongful dismissal; but the jury found that he was properly discharged. He would also admit that an application to increase the 14s. 9d. to £1 was refused by his Honour, who found that the bodily condition of the applicant had not altered for the worse since April 1, 1901; and that until November, 1902, he had earned 27s. a week as a gatekeeper, and that the wages were earned and were not a gratuity; that if he had not disobeyed orders he would still have been earning these wages; that since Nov. 22, 1902, he had been unable to get work as a watchman, but that there was no evidence he had tried to do so.

George Clark, the applicant, then gave evidence as to work he had applied for from March 19, 1903, to March 2, 1904, a written record of which was put in. He said that applications, though made almost day by day, were unsuccessful, except that he was engaged at Purfleet from the 4th to the 9th of August on harvest work, which he was unable to continue as the pain in his hand and shoulders was too great. Among his 150 applications for work there were 24 to the station yard and 40 to the West Ham Council. He had received many written replies to applications for work.

Mr. NEILSON objected to the admissibility of these documents.

His HONOUR, however, admitted them, on the ground that unless this were done the evidence which the Court of Appeal had held might be adduced could not be strictly given, except at an expense which would be prohibitive.

In cross-examination by Mr. NEILSON, witness said almost all the applications he had made were for the work of a watchman or gatekeeper. Previously to taking on the harvest work in August he had not done any manual labour since the accident; but he had book-keeping to do while engaged as the Company's gatekeeper.

The shorthand notes of the proceedings on April 1, 1901, and March 13, 1903, were put in as evidence.

Mr. NEILSON based his objection on the case of *Crossfield v. Tanner*, in which it had been decided that the ground work of section 12 of schedule I. of the Workmen's Compensation Act was that the circumstances must have changed to justify an application to the Court for revision. This was also decided by the Court of Appeal, and had not been overruled by *Sherman v. Holliday and Greenwood*. The only change of circumstances here was that the man had made a number of applications for work; but if the market was overstocked, it would be hard upon the employer if he had to bear the brunt of it. The man had not been refused employment because of the maimed condition of his hand, which was the case with Sherman, but because there was a superabundance of labour. He was perfectly able to do work, and it was his own act that brought about his dismissal by the Company in 1902.

His HONOUR said he regarded this as a most important case, as to which he should like to hear what the Court of Appeal had to say. It was a difficult thing to know what to do in cases where occupation could not be found for a man who had been injured, but was capable of working as a watchman. People who wanted gatekeepers or watchmen generally reserved these posts for their own men who were injured. He should be very glad of any assistance that could be given him by either side.

Mr. THOMPSON having replied briefly,

His HONOUR reserved judgment.

The Keith Light.—The City of Bradford Memorial Hall Inaugural Exhibition, 1904, is the outcome of a generous offer to the city of Bradford by the Rt. Hon. Lord Masham in 1898, of the sum of £47,500, for the erection of an Art Gallery and Museum, to serve as a memorial to Dr. Edmund Cartwright, whose great inventions have done so much for the staple industries of the city. The Art Gallery has now been built in one of the parks of the city at a cost of something like £70,000; and to celebrate its opening, and to more permanently record the inaugural ceremonies, the city authorities have enclosed some 26 acres of the park, and have erected several imposing buildings therein—the whole forming a very pleasing architectural combination and, with their contents, a most creditable exhibition of local and allied industries. Even to those who are not connected with the Bradford trade, the exhibition is most interesting; and it gives one a thorough insight into the many wonderful contrivances and machines employed, and the great advances made since the time of Cartwright. Of course, to us, the lighting arrangements are of first interest. Unfortunately the city authorities thought fit to employ electricity practically throughout; but the Gas Department have reserved one broad promenade to be lighted by gas. Their Engineer (Mr. Charles Wood) has employed the Keith system, and with such success and economical results that the authorities now regret that this form of lighting was not more extensively employed. The installation consists of 40 lamps, each fitted with three 300-candle power Keith burners, suspended about 20 feet from the ground line on poles of a pattern reminiscent of the "Far East." The gas pressure is increased by one of Keith's patent No. 4 water-driven compressors, situated under the floor of the Concert Hall. A special feature of this installation, and one which gives most pleasing results, is the lighting-up arrangement. This is accomplished by Keith automatic mercurial lighters, which control both the gas supply to the burners and to the pilot lights; and by starting or stopping the compressor, the whole of the 40 lamps are respectively lighted or extinguished. Greater facilities should be afforded the general public of knowing that these lights are really produced by gas, as we hear that many people confuse them with electric lights. Those, however, who are "in the know," are asking their friends, "Why do these 900-candle power lights give so much more illumination than the 2000-candle power electric lamps?"

MISCELLANEOUS NEWS.

THE OMAGH ARBITRATION AWARD.

Mr. Joshua W. Edmundson, the Arbitrator in the matter of the price to be paid for the purchase of the Omagh Gas-Works by the District Council, has issued his award. It amounts to £26,880. The arbitration proceedings were published in the "JOURNAL" for April 19. Among the witnesses for the Company were Mr. Corbet Woodall, Mr. Joseph Hepworth, Mr. Wm. Cash, and Mr. James Brodie, the Engineer and Secretary of the Company; while, on the other side, Mr. Arthur Silverthorne appeared. Mr. Woodall made the actual value of the concern £36,304; and Mr. Hepworth, £34,850. On the other hand, Mr. Silverthorne could only find a total value of £16,367. "No compensation" has been allowed by the Arbitrator "for consequential injury and disturbance."

ROYAL COMMISSION ON LONDON TRAFFIC.

Evidence for the South Metropolitan Gas Company.

The first witness at the sitting of the Royal Commission on London Traffic last Thursday was Mr. CHARLES CARPENTER, the Chief Engineer of the South Metropolitan Gas Company.

THE EXTENT OF THE ROAD OPENINGS IN SOUTH LONDON.

In the first place, Mr. Carpenter informed the Commissioners that the South Metropolitan Company lighted practically the whole of London south of the Thames. Their district extended to, and was bounded by Battersea, Tooting, Wandsworth, Norwood, Sydenham, Beckenham, Chislehurst, Bexley, and Erith, and covered an area of 51½ square miles. It was an extremely rare occurrence to have a complaint of obstruction or inconvenience caused by the laying of gas-mains in this large area, although it contained 1100 miles of gas-mains. The total length of roads in the Company's area was approximately 700 miles, which might be classified as follows: Main roads, 62 miles; secondary roads, 104 miles; side streets, 534 miles; total, 700 miles. As regarded the laying of pipes, even in the 62 miles of main roads, the Company's operations had, considering the magnitude of their business, been on a comparatively small scale. Witness put in the following table giving the mileage laid in the main roads, secondary roads, and side streets, during the past three years:—

—	Main Roads.		Secondary Roads.		Side Streets.	
	Miles.	Yards.	Miles.	Yards.	Miles.	Yards.
1901	2	1,388	13	1,501	39	397
1902	3	123	11	111	36	378
1903	2	444	10	333	38	987
Totals	8	195	35	185	114	2

Questioned on this table, Mr. Carpenter said that the 8 miles 195 yards of pipes laid in main roads in the three years included alterations made at the request of the London County Council, and the figures given represented the total opening up of the main roads. Regarding the 114 miles 2 yards of side streets, this embraced many side streets opened up on account of new property. South London was altering very much in its character. In Clapham, Balham, and other places, the extensive grounds (of perhaps several acres) attached to the large houses, were being cut up into smaller property; and a great deal of the main laying under the head of "side streets" applied to these new streets. During last year, too, 687 openings of ground were also necessitated, owing to escapes of gas, out of a total of 259,644 consumers, and 100 openings on the services supplying 22,235 public lamps.

THE PRACTICE OF THE COMPANY IN OPENING STREETS.

It was next stated by witness that it was the practice of the Company to take advantage of the paving works and improvements carried out by the various Borough Councils, and to anticipate, as far as possible, the increased demand for gas. The various Borough Council Engineers send notice of these intentions to the Company, who, on receipt of it, address a circular-letter to every consumer along the route of the proposed alterations. Witness put in a copy of the letter as follows:—

South Metropolitan Gas Company,
709, Old Kent Road, S.E.

DEAR SIR,—We are informed by their Engineer that the Borough Council are about to repave the road and footways of..... It is desirable that, upon completion of this work, disturbances of the ground shall, as far as possible, be avoided. We therefore propose to at once effect any necessary alteration to our service-pipes, &c.

It will assist us in this matter if you will kindly inform me if the gas supply to your premises is sufficient for existing demands; also if there is a probability of an increased supply being required.

As the matter is urgent, an early reply, per enclosed postcard, will be esteemed a favour.—Yours faithfully,

CHAS. CARPENTER,
Chief Engineer.

Copy of postcard enclosed with the above:—

..... 190 ....

Is the supply of gas to your premises satisfactory?
Is it probable that an increased or additional service will be required?

So far as possible, the Company entered into correspondence with the Engineers of the Borough Councils, and agreed with them on their plans. The Councils gave the Company as long a notice as possible of any paving work it was their intention to carry out. On receipt of the notice, the Company took the pressures in the mains, to ascertain whether there was an adequate supply of gas, having regard to the prospects of increase. As was also seen, in order to take every possible precaution, the Company sent to all the consumers on the line of route of the repaving works, to see whether the supply of gas was satisfactory, or whether it was necessary to increase the size of the mains or service-pipes in order to improve the supply.

CHANGES WROUGHT BY THE PREPAYMENT SYSTEM.

The principles governing the supply of gas in London had greatly changed during the last few years, owing to the invention of the penny-in-the-slot meter. The time was indeed approaching when every house would have a supply of gas. He might say that since 1892, the South Metropolitan Gas Company had had a gain of 200,000 consumers, largely owing to the change to which he referred. In fact, the bulk of these new consumers—some 160,000—were on the slot system. In 1892, the Company had about 80,000 consumers; so that there had been an enormous increase. Prior to this development, one service main was sufficient in many South London streets; and as its function was to supply gas to those consumers who might require it on both sides of the street, it was frequently laid in the roadway. With the almost universal use of gas, through the popularity of the slot meter, this system of mains was found unsuitable; and the present practice was to lay a service-main in each footway, reserving the roadway for the trunk main. This reduced the length of service-pipe and minimized the openings in the ground required when new services were laid or old ones renewed. This work had been to a very considerable extent executed already; so that a good many of the mains referred to in the table were the result of this change in practice. Under this system of laying a pipe under each footpath, the roadway was not broken up so much as formerly.

COMPANY OR CONTRACTOR WORK.

Proceeding, Mr. Carpenter laid stress on the fact that all the main-laying, as well as the service-laying, is carried out by the Company's own workmen; and, with such a system, he said it was less likely to cause inconvenience than if placed in the hands of contractors, who had not the same interest in maintaining a friendly relationship with the gas consumers, or the public, which was the same thing. He emphasized this; remarking that the carrying out of the work by the Company's own men had helped the friendly relationship existing between the Company and the various Local Authorities. In the case of a contractor, in commencing his work, he picked up what labour he could; and he had not the same interest as the Company in carrying out the work to the satisfaction of the Local Authorities, who were large consumers, as well as the general public. Of course, the Company found it was good policy to maintain friendly relations between themselves and the Local Authorities.

RECENT DISTURBANCES.

Witness subsequently remarked that he had no hesitation in saying that only a minimum of the inconvenience caused by the operations of laying underground pipes arose from the operation of gas companies. The public were so accustomed to associate a pipe laid in the ground with the supply of gas and water, that they gave such companies the blame for the whole of the disturbances, not knowing that vast disturbances of roads and footways had been caused by the rapid extension in the last few years of telephones and electricity for lighting and tramways. The present state of affairs as regarded gas and water had been one of long growth, while the electric light and telephones had been of comparatively recent growth, which meant that their consumers and users had been connected in a much shorter time, and that therefore this had caused a large proportion of the openings in late years. He was speaking of his own knowledge not only in South London, but as a resident in Westminster.

CENTRE ARC LAMP COLUMNS.

As a user of the streets, Mr. Carpenter pointed out the disadvantage of standards being placed in the middle of the road, as compared with the advantage of incandescent gas-lamps placed along the line of kerb. One of the Borough Councils in South London had tried the experiment of placing the arc standards in the centre of the road; but already, since about the middle of March, three of them had been knocked down. This proved that the obstruction was a serious one. It was assumed that, when the electric arc standards were placed in the middle of the road, the light was distributed more uniformly; but he regarded the effect as a patchy one. The normal electric arc light gave (say) an illuminating power of 600 candles, and cost about £33 a year. Ordinary incandescent gas-lamps would give from 50 to 80 candles nominal; and if eight or ten of these were spread over the distance lighted by one arc, the light was distributed better along the road than was possible with the electric arc.

SUBWAYS.

Mentioning that in the South Metropolitan district there was only one subway in Southwark Street and a small one in the Tower Bridge approach, Mr. Carpenter said he could affirm, with confidence, that, at any rate so far as gas supply was concerned, neither on the score of saving of expense nor convenience, had the expenditure on the construction of the one in Southwark Street been remunerative. The Gas Company had no mains in it. But they had a main on either side towards the kerb—one a 10-inch, and the other a 14-inch; and these two mains had been adequate for the supply of gas ever since the subway was built. This subway extended from the Blackfriars Road to the Borough; and it had not been of the slightest use so far as the supply of gas was concerned. In that case, the object of the street was known in the first place, so that good-sized mains were put in. Of course, one of the difficulties with regard to the supply of gas was that in some cases the character of the property abutting on the roadway changed; and a main that was large enough for consumers ten years

ago, was not large enough for to-day. This, however, did not apply to Southwark Street.

NOTICES AND SUPERVISION.

It was pointed out by the Chairman, that a suggestion had been made that, when a Local Authority was going to break up the streets, notices should be given to all the occupiers of the subsoil; that an attempt should be made to get them to do what work was essential at the same time; and that, while they were opening the streets, there should be some precaution taken against unnecessary obstruction. Upon this witness said that, with regard to supervision, the work was now to a considerable extent under the snpervision of the Borough Engineers. They did see that the work was carried out in a manner which caused the minimum of inconvenience. With regard to all the companies—gas, electric, water, and telephone—executing their work at the same time, he thought this would be extremely difficult to carry out in practice. It was very difficult indeed to know beforehand what might happen. What sometimes occurred in the case of gas was this: Take a main running along a thoroughfare sufficient for present needs. An adjacent district suddenly became filled with houses; and the gas-mains were no longer adequate. It was very difficult to anticipate such a consumption of gas as this alteration would entail. The consumption of gas, too, was largely influenced by climatic conditions—that was to say, it was very much larger in the winter time than the conditions of daylight and darkness would alone suggest. So that it was not possible, until the time came, to say that the supply of gas was insufficient. It was not very often that the Company had to take up their mains to lay new ones in the busy parts of their district; but in the outlying parts, the character of which was changing, they had to be continually increasing. So far as was possible, they looked ahead. They had a careful record of the pressures in the district taken during the heavy demand in the winter; and, so far as it was possible to foresee, they provided for the requirements in the summer. It was impossible to provide for them all; but, in practice, they could provide for them largely. As regarded supervision, supposing, under present circumstances, the Borough Surveyor thought the Company were obstructing the streets unnecessarily, he would write to them, then he (witness), or one of his officers, would meet the Borough Surveyor in a friendly way; and the Company would do all that was practicable. It was very rare that they had a dispute; when they had had one, it had always been settled. As to the other suggestion that, when there was a dispute there should be some third party who could be called in to settle it, he thought that provision for this, to some extent, existed already. The Company had to get the consent of the Borough Council before they could lay a single main; and he thought that all companies should be compelled to get similar consent. The result of the system under which they worked was that only once had they to call in aid the machinery provided—that was, a reference to the Board of Trade—to settle a dispute. In their case this did not take much time. Speaking for the South Metropolitan Company, he was very well satisfied with the present system.

SUBWAYS, REPAIRS, AND A CENTRAL AUTHORITY.

All the foregoing evidence was the result of interrogations by the Chairman (Sir David Barbour); and other members of the Commission then applied themselves to eliciting further information from witness. He stated that, in the case of an emergency, the Company would go and open a road at once, though, of course, they would send notice to the Local Authority. The attention of witness was again directed to the mileage of mains laid in new streets in the Company's district in the last three years; and he was asked whether he thought the other Gas Companies had laid down anything proportiona'e to that. He said he did not, as their districts had not developed at so large a rate as the South Metropolitan Gas Company's. In such cases as these, subways could not be applied. They had 687 openings of ground, besides 100 more for different purposes, including escapes of gas. Asked as to the cost of these openings, he said that a rough estimate would be 35s. each for the opening and the reinstatement of the pavement. He had no doubt that, if this work had been done by contract, it would have cost more. It was very difficult to say what the exact amount would be. Under a contract, work of this character was very troublesome to supervise. He did not think subways would save them much in the total in connection with repairs, though, of course, the actual repair would be cheaper, and they would save the cost of taking up the roads. It must, however, be remembered that the area of the Company's district was 52 square miles; and the length of the roads in the district, 700 miles. These openings to which he had been referring had been distributed over this 700 miles; and the cost of providing subways throughout such a length of street would be enormous. The questions put to him presupposed the use of subways; and his reply was that the saving would be practically out of the question for that length of subway. In so many of the streets, the necessity for a subway would be very small. In more than half of them, perhaps there would not be more than two mains of 4 or 5 inches diameter for gas and water, and perhaps a telephone wire. In South London, he did not suppose there would be more than 15 miles of crowded thoroughfares. "Therefore," remarked a member of the Commission, "if these subways were put in 15 or 20 miles of crowded streets, this would be but a small proportion of the total." However, witness added that, although the amount spent on the reinstatement of pavement was large annually, he had never been able to see his way clear to save it by the adoption of subways. Carried once more to the question of supervision, he said that he infinitely preferred the Borough Council to a Central Authority such as the London County Council. The former knew the requirements of the localities, they were reasonable men, and did what they could to meet the wants of the Company. The system under which they had worked had been productive of the minimum of friction; whereas under the London County Council there would be the maximum of friction. As an instance, he mentioned that the methods of testing gas in London had been carried out by the latter in an extremely narrow-minded manner.

This concluded the evidence on behalf of the Metropolitan Gas Companies.

SALES OF STOCKS AND SHARES.

The West Ham Gas Company recently invited applications for £33,300 of debenture stock and £100,000 of preference stock. The former was allotted at from £107 down to £106, and the latter at from £118 down to £113 15s., per £100 of stock. The total applications amounted to upwards of £488,000. The East Grinstead Gas and Water Company recently offered for sale by tender 400 £10 "C" shares, ranking for dividend up to 7 per cent.; the last dividend paid on these shares being £6 6s. per cent. A minimum price of £12 per share was fixed. When the tenders were opened, it was found that 1048 shares had been applied for, or upwards of 2½ times the number offered; the maximum price being £12 10s. per share. The whole issue was allotted at prices averaging £12 7s. 1½d. per share; and, with two exceptions, the lots went into the hands of previous shareholders. At the Lion Hotel, Cambridge, a few days ago, Mr. A. C. Grimwade sold some parcels of stock of the Cambridge University and Town Water-Works Company. The £50 lots of original consolidated stock fetched £144 and £146 each; £30 of 10 per cent. consolidated stock (representing £3 shares, first issue), £81; £28 of similar stock (representing £2 shares, first issue), £76; £40 of ditto, £109; £33 of ditto, £84; £15 ditto (representing £2 10s. shares), £39; £700f 7 per cent. consolidated stock, issued under the Act of 1886, £124; and seven £10 shares, £7 paid (last half-year's dividend at the rate of £7 per cent. per annum), £13 10s. each. On the same occasion, Mr. Grimwade sold £67 of original consolidated stock of the Cambridge Gas Company at £147; £50 at £113; and two lots of £65 of consolidated "B" stock, 7 per cent., at £98 each.

THE ROCHDALE GAS RESERVE FUND.

In the course of the consideration of the budget at the recent annual meeting of the Rochdale Town Council, Mr. Sharp, referring to the proposal noticed in last week's "JOURNAL" (p. 402) to pay for this year's public lighting out of the gas reserve fund, moved, as an amendment—"That the amount to be taken from the gas reserve fund be £10,428, instead of £5228." In proposing this, he said the increase of £5200 would reduce the general purposes rate from 1s. 7d. to 1s. 3d. in the pound. They had the money in the gas reserve fund; and there was no getting beyond the fact that times were bad. The reserve fund now stood at £23,797; so that if they took away the amount he suggested, they would still have £13,369. If it was right for the Gas Committee to suggest that the Council should take £5000, he thought it was only right that they should take an amount equal to a 4d. rate more from the fund.

Mr. Clark seconded, on the ground that these were exceptional times; and if they could reduce the rate, they ought to do so. He knew that the Gas Committee wanted to keep the money untouched for certain purposes; but he thought it would be far better to reduce the rates.

Mr. Walker stated that the reserve fund had been put by for a special purpose; and if they touched it for another object he considered it was bad finance. Alderman Cunliffe replied that the Council had a right to do as they liked with their own money. They had £20,000 in the reserve fund untouched. He asked if it would take more than £13,000 to build a retort house; and whether they were going to stop the commercial growth of the town by making the rates high when they had the opportunity of touching a fund that would make a difference of 3d. or 4d. in the pound? Was it, he said, a fair thing to have deficiencies on the tramways and water-works, and not touch the profits of another undertaking which was carried on on behalf of the ratepayers? His argument was that if they had a loss on the tramways and a deficiency on the water-works account, while another business was prosperous, they should equalize. So long as they had losses on these two undertakings, he thought it was sound finance to ask them to vote another £5000 out of the very large profits they made out of the gas enterprise. Alderman S. Turner said Alderman Cunliffe knew that the gas reserve fund had been put by for the purpose of renewing works for which there was an immediate necessity. They were already going to take £5000 from the fund; and now they proposed to make it £10,000. He would like to know what the Gas Committee were going to do if the Council were to take all this money away. Mr. Blomley pointed out that the Committee had already devoted £13,000 to the reduction of the rates from the profits; and he asked whether the Council were going to cripple the works that produced these profits. Mr. Ogden said that they were not getting the best results at the gas-works now owing to the unsatisfactory state of the plant; and the Committee had gone to the extreme of their borrowing powers. Mr. Pilling said he had heard for a long time that a new retort-house was needed; and, if so, he advised the Gas Committee to spend their money on it. A considerable sum had been expended on the present retort-house during the past few years. Personally, he did not consider that the expenditure was required, as the demand for gas would decrease. Alderman J. Turner said that the Gas Committee had been struggling hard for years to build up a fund in order to renew the retort-house. The object of the Committee was to bring the old retort-house up to date, and so produce gas at a lower price than they were able to do at present. They were losing money every year on account of the state of the works. Mr. Jones said it had not been stated that the cost of the new retort-house would probably be between £25,000 and £30,000. If no alteration was made, the Committee would work at a loss of something like £800 next winter.

On a vote being taken, the amendment was lost by 21 to 9.

Discounts at Yeovil.—The Gas Committee of the Yeovil Corporation have decided to increase the discount allowed on prompt payment of gas accounts from 2½d. to 5d. per 1000 cubic feet, and to make a corresponding reduction to the users of prepayment meters.

WELSBACH INCANDESCENT GAS LIGHT COMPANY, LIMITED.

The Restoration of the Concern to Prosperity.

For the first time for a long period, the shareholders of the Welsbach Company met yesterday, at Winchester House, in an atmosphere of perfect harmony; and if anyone had attempted to cause a rift in it, there is no doubt that he would, under the circumstances of the occasion, have been considered by the majority of those present as worthy of their indignant contempt. In addition to harmony, interest of the first order ran throughout the proceedings; even though the speech of the Chairman (Mr. M. W. Mattinson, K.C.) extended over some 65 minutes. In the first place, he made touching allusion to the death of the late Chairman (Mr. Edgar Williamson), whose career he described as having been a most useful and honourable one. Three years ago, he said, Mr. Williamson brought into the crisis of the Company's affairs the very qualities which the situation demanded; and in their service without stint he used those qualities—wide business experience, sterling common sense, courage to decide when hesitation would have been fatal, and, above all, a single eye to the Company's interests. Though the man had gone, his works remained. Next the Chairman congratulated the shareholders on the fact that the controversy in regard to the reorganization had been finally closed; and that day they were, he said, to reap the fruits of the settlement. While perhaps the proposals made in connection with the reorganization were not ideal ones, they were framed on the principle of making the best of a bad business, for which the present Board were not responsible. It was infinitely to the credit of the shareholders that they had had the good sense to see that they would not make their losses any less by refusing to look at them. He regarded their acceptance of the scheme as a triumph of good sense and reasonableness. As to the subsequent proceedings in the Law Courts, the Chairman stated that he was not sorry those who differed from them took the case into the Courts, because he had always felt that, if this most difficult question of reorganization had been determined merely upon the opinion of the Board and of their legal advisers, there would always have been people who would have had their misgivings upon the matter. The case was taken into two Courts; and the judgments unanimously decided that the scheme was a competent one legally, and that, in its details, it was fair and reasonable. Therefore, the question of reorganization was now a closed book. In further remarks he publicly acknowledged the courtesy of the United States Debenture Corporation, who, as soon as judgment had been given in the Court of Appeal, accepted the decision. However, there was, the Chairman proceeded, even now a little lingering misapprehension. In the balance-sheet of twelve months ago, there appeared as undivided profits the sum of £129,770. Now this sum was necessarily appropriated to make up the capital of £1,345,000 which was suggested to the shareholders; and if it had been possible to divert any portion of the £129,770 from this destination, there would have had to be a proportionate reduction of the amount of the new capital. Having disposed of this matter, he said that, by the scheme and the decision of the Court, they were compelled to take Aug. 14 last—the date upon which the decision of the Court approving the scheme was registered—as the dividing-line as regarded profits capable of division. In other words, the Company started from Aug. 14 with a clean slate. If the shareholders approved the recommendations of the Directors as to the dividends, when they were distributed, then £7077 would be the undivided profits of the Company—that sum and that sum alone.

Commenting on the accounts, the Chairman said he need not say with what satisfaction the Board presented them, and were able to recommend the full dividends which were foreshadowed by the memorandum accompanying the scheme of reorganization—at the rate of 6 per cent. on the preference shares, and of 5 per cent. on the ordinary shares. Turning to the profit and loss account, it would be found that the total profit of the year, before the deduction of debenture interest, was £102,112; and this compared with £51,908 last year, or an improvement of £50,214. This was taking the profit and loss account as a whole. In order that he might make the comparisons he desired to institute with regard to the English business, he deducted from the £102,112 the sum of £36,450, which represented the dividend received from the Austrian Company. This left £65,662, which was the net profit of the English business. Now it was a fact that this £65,662 was far and away the largest profit that had been made in any year in respect of the English business by the Company since its incorporation six-and-a-half years ago. Disentangling the English results from the dividends received from the Austrian Company during the past six years, the shareholders would be able to see at a glance what he called the dip of the curve and the rise of the curve in regard to the profits of the English business. In the year ending March, 1899, the profits of the English business purported to amount to about £50,000. It was the year when the mantle monopoly was in full operation—when prices were high, and when the profits should have been great; but they were eaten up by expenses. For the second year, the profits on the face of the accounts purported to be about £55,000; but this was only obtained by transferring the sum of nearly £30,000 from reserve to the credit of the trading account, in order to meet depreciation upon stocks. And, of course, if the ordinary method (which had been followed by the present Board) of writing-down stocks out of gross trade profits had been followed, this profit could not by any possibility have amounted to more than £25,000, if as much. In the third year, the English profit on the face of the accounts purported to be £3000. But again there was a transfer from reserves to meet depreciation of stocks; and if this was taken into account, there was a loss of over £6000. But he took the profit as £3000. The fourth year was the one at the fag-end of which the present Board came into office; but the old Board were responsible for the trading of the year. The new Board were at once brought face to face with a great difficulty. The Advisory Committee had reported, in the previous December, that the stocks, which stood in the previous balance-sheet at £117,000, were very much overvalued. They could not continue a state of things involving a permanence of considerable over-valuation of stocks; and they had no reserve fund to call upon in order to relieve the situation. There was no direction in which to look for a reduction of the over-valuation of these stocks, except the proper quarter—viz., the reduction of the gross trading profits. In that year the present Board did what they could, but not so much as they would have liked, in regard to the reduction of stocks, with the result that in the fourth year there was no profit on the English business, but a loss of £22,000. In the fifth year there was a profit of £51,900; and this year one of £65,600. Now, this was what he called the dip and the rise of the curve—from £50,000 to *minus* £22,000, and from that to *plus* £65,000.

This was an encouraging review; but the Chairman explained that he was not calling attention to these facts in order to encourage optimism. This was a large profit for a highly competitive business of this description to make under the trading conditions which had prevailed, did prevail, and were likely to continue to prevail. Nor did he say this in order to claim any special credit for their able General Manager (Mr. L. Fletcher) and his staff, though no credit the shareholders could give them would be too much. That was not his object. But it was this—to draw attention to the fact of how quick had been the revival of the Company, and to caution the shareholders against assuming that it was possible for the concern to continue to advance by the leaps and bounds which had marked the past two years. That would not be a reasonable expectation.

Passing from these interesting figures to a few details, the Chairman called attention to the fact that the gross profit on trading appeared in the profit and loss account as £103,000, against £104,000 last year. Referring to criticism that had been made upon this point, he said that the key to any industrial company was stock; and the valuation of stocks was everything. Just in proportion as those who were responsible for the valuing of stocks took an optimistic view or a more cautious view, so was the gross trading profit greater or less; and during the last three years, a more drastic standard had been applied to the depreciation of stocks than prevailed in the three years before, with the result that the gross trading profit had necessarily suffered, but with the further result that the balance-sheet had been proportionately improved. Stocks two years ago stood at £117,000; to-day they stood at £47,000—a difference of £70,000. The item of interest next came under comment and review, in the midst of which it was brought out that during the past year the Directors had applied out of their cash balances which otherwise would have been making interest some £48,000 in reduction of debentures, and the acquisition of these debentures had meant the reduction of some £2000 in the debenture charge. On the other side of the account, salaries and wages amounted to £19,183, which compared with £29,179 the year before, or practically a reduction of £10,000. This reduction followed upon a much greater one during the previous year, because in the year before the item was brought down from £58,000 to £29,000. Advertising was £10,391, against £10,123, which showed that it was up a little. [A shareholder exclaimed, "And quite right too, Sir."] The Board, the Chairman explained, considered advertising a remunerative expenditure. Waste they were prepared to curtail without mercy; but remunerative expenditure would not be curtailed. As to the item of "law," they had spent £1157, against £1966 last year, and £16,000 the year before.

On this question of expenditure for legal purposes, the Chairman made some remarks which it is hoped will be widely read. A portion of this money, he said, had been spent in instituting and prosecuting to conviction certain proceedings which the shareholders were told a year ago it was the Directors' intention to take against sundry rogues, who were selling imitation Welsbach mantles as Welsbach mantles. These persons were prosecuted in the Police Courts of Manchester, Liverpool, Birmingham, and, he thought, other places. They were all convicted, with heavy penalties; and, in addition, the Company obtained injunctions against them. Beyond this, various large consignments of the spurious goods were seized, at the instance of the Company, either by the Customs Authorities or by process of law. Although they spent a little money over this, it was well spent. The path of the transgressor was made very hard for him; and he (the Chairman) believed that, at any rate for the time being, the Company had succeeded in suppressing this nuisance. If it revived, they would know how to deal with it again. There were three remedies. They were not alternative remedies, but they were cumulative ones. These were the criminal law, the civil law, and the seizure and destruction, by order of the Court, of the goods. If this sort of rogue lifted his head again, there was not the slightest doubt the Company would pursue concurrently all these remedies against him. The Company, too, had cause of complaint against traders who held a more respectable position than the class of person of whom he had been speaking. He made no complaint against any man who chose to make, or get made, an incandescent burner of his own, and sold it as his own, provided always it was not a Kern burner, in regard to which the Company had undoubted patent rights. But they did complain of the improper and illegal use which they had reason to believe that a number of people were making of the name of the Company in connection with inferior burners. It was a gross infringement of the trade mark and trading rights of the Company for any man to put the word "Welsbach" or "Aur"—though he might misspell it—upon his own goods, and so seek to pass them off as the well-known commodities of this Company. The Board were the least litigous Board in the world. But he wanted to say this, that, no matter what the cost might be, and no matter who the persons might be, the Directors were determined to institute, and prosecute to the end, proceedings against all who purloined, or attempted to purloin, the trade name of the Company as a means of palming off their goods upon an unsuspecting public. In this matter they looked to the assistance of the trade to do all in their power to secure fair trading and dealing. It was not in the interest of the trade to give any currency to inferior goods sailing under false colours.

A reference was next made to the provision in the accounts for the contingency of bad and doubtful debts; and this brought the Chairman to the reorganization expenses amounting to £2123, which, he stated, covered everything, including the litigation. In this connection, he acknowledged the work of the clerical staff, and also of the

Company's Registrar (Mr. Harper). The total charges on profit and loss account came to £41,400, as compared with £103,400 two years ago, or a reduction of exactly £62,000. The profit was £65,000; the reduction of expenses was £62,000. Did it not, he asked, strike the shareholders that there was an intimate connection between the amount of net profit and the reduction of the expenses? But during the past two years, there had been a large reduction in the prices of the various commodities sold by the Company. He believed the concessions to the trade and the public in reduced prices and increased discounts upon the enormous output of the Company represented something like £50,000. With a reduction of prices of something like £50,000, the gross trading profits would necessarily be down £50,000, unless there was a large economy in the cost of production and in the methods of administration. In point of fact, there had been this rough division made between the shareholders and the public: During the last two years, the latter had substantially got the benefit of the reduction in cost of production; while the shareholders had got the benefit of the reduction in cost of administration—in the form of dividend. Attention was also directed to the Company's position in connection with the Austrian Company, to the considerable reduction of the dividends from that Company, and to the hope that it would not be long before the separation of the "A" and "B" undertakings would be an accomplished fact. The Chairman believed it probable that the next dividend from the Austrian Company would be about £30,000—a great drop from the £100,000 once paid. The last dividend received amounted to £36,450; and he hoped with the next dividend they would have reached the bottom so far as the Austrian Company were concerned.

The motion for the adoption of the report and accounts and for the declaration of the dividends was seconded by Mr. F. J. Brinsmead. A few questions were asked; and the reply of the Chairman showed that, when the "A" and "B" Austrian undertakings were separated, the Company would give up all rights in what one shareholder described as the will-o'-the-wisp Osmium lamp, that the Clamond stove is now producing a "real profit," and that Mr. Fletcher anticipates an appreciable profit from the new cooking-stove and other appliances. The motion was unanimously carried.

The retiring Director (Major George Pringle) was re-elected, as were also the Auditors. The warmest thanks of the meeting were tendered to the Advisory Committee for what they have done for the Company; and the Chairman and Directors were also heartily thanked.

DEVONPORT GAS AND ELECTRICITY WORKS.

Contemplated Adoption of Water-Gas Plant.

Though the accounts have not yet been presented to the Town Council, it is stated that the working of the gas undertaking of the Devonport Corporation will show a substantial balance of profit for the past financial year. The concern has now been in the possession of the Corporation for two years, and the period has been one of transition—a good deal of extra expense being thrown on it in connection with the costs of the transfer and the renewal of works. Out of the first year's revenue, a sum of £1000 had to be paid to make up the maximum dividend of the shareholders in the Gas Company; and last year about £600 was paid towards clearing off the costs of acquiring the undertaking. There will, however, be a substantial net profit; and Mr. S. E. Stevenson, the Engineer and Manager, is to be heartily congratulated upon having achieved this result in face of many difficulties arising from inadequate plant and other causes. Among the steps which are now being taken to increase the capacity of the works is the proposed erection of water-gas plant. At the meeting of the Town Council last Thursday, it was reported that the Chairman (Mr. W. Hornbrook) and two other members of the Gas Committee had been appointed as a deputation to inquire and report upon the best kind of plant for the production of water gas. Mr. Hornbrook said that the matter had been under the consideration of the Committee for some time. They wanted a great deal more gas than the present plant could produce, and the revenue of the undertaking was suffering because they were not able to supply all the demands made upon them.

At the same meeting, a report was presented showing that the net profit of the electricity undertaking for the year ended the 31st of March last was £1359. Mr. H. Banbury, the Chairman of the Electricity Committee, stated that last year the coal consumption was 512 tons less than in 1903, while they generated 322,526 units more. The Corporation were hardly dealing fairly with the Committee; for of the output of the electricity works they took only about 2 per cent. A few years ago, the Committee were induced to spend between £900 and £1000 on laying mains for public lighting; but they had now only some 17 or 18 lamps, yielding a revenue of £22 10s. a year each. It was a drag on the department to have this capital lying dead in the streets. With regard to the financial position of the undertaking, he explained that there was a deficit of £3034 brought forward from previous years. Of this sum, £1915 had been paid off out of last year's profit, and the adverse balance now carried forward was only £1119.

AUCKLAND (N.Z.) GAS COMPANY, LIMITED.

The Annual General Meeting of this Company was held at the Offices in Auckland, under the presidency of Mr. J. H. Upton.

The accounts, prepared under the supervision of the Secretary (Mr. E. B. Parsons), showed a profit of £32,002 13s. 10d. on the working in the year ending the 25th of December; and after payment of the usual dividend, there would be a balance of £7643 16s. 7d. to be carried forward. There was an increase to the extent of 8 per cent. in the gas sold last year, the value of which was £5705.

The Chairman, in moving the adoption of the report, referred to the matter just alluded to, and said it was obvious that an increase of 21,805,000 cubic feet of gas sold involved the carbonizing of more coal, more purification, and the paying of more wages; but the balance of profit showed that all was in due proportion. During the year, the mains had been extended by 17 miles; the total now being 173 miles. On the previous occasion, reference was made to the removal of the works. After most careful consideration, the Directors decided that it was in the interest of the Company that the removal should take place at as early a date as possible consistent with taking the full benefit out of the more recently erected retorts in the old works. The construction of the new works was, therefore, steadily proceeded with; and it was decided to gradually instal 13 beds of through retorts, capable of making a maximum of about 1½ million cubic feet per diem. Three settings in the new works would be in use in the coming winter. By the arrival of the following winter, the greater portion of the carbonizing would be done there; and by the succeeding winter they would probably be completely removed. The new works were of a magnitude to admit of the economical use of machinery; and it was intended to employ it on a considerable scale. Deciding as to what was best to adopt gave the Board much anxious thought; and it was considered best to send their Engineer (Mr. Chenery Suggate) to England to see the makers of such machines as there was no doubt about, and to report upon the new inventions lately introduced in Paris and at Bruges. He found these machines to be all that had been said of them, and an admitted improvement on any other existing appliance. It was fortunate that Mr. Peacock and Mr. Myers (two of the Directors) were in London about the same time; and, at the request of the Board, they went to Paris and to Bruges and saw the machines at work. The Company were much indebted to these gentlemen for their valuable help in this matter. During the year, there had been expended on capital account the following amounts: New buildings and machinery, £16,487; new mains and services, £15,048; new and additional meters, £4329; and land, £1275—total, £37,139. The capital expenditure that had been going on for several years required some particular mention. In 1897, at the time when large capital outlay became necessary, the sale of gas was 195,463,000 cubic feet; last year it reached 300,518,000 cubic feet. At the former date the works seemed to be doing all they were capable of; and the distribution required much attention. Since then there had been paid up by shareholders £85,079 of capital, of which £42,708 carried dividend, and £42,371 was premium capital. The expenditure on capital account for the same period had been £120,850, distributed as follows: New works, £34,024; gasholder, £28,340; new mains and meters, £56,731; and land, £1755. Of course, as long as the business continued to increase, further capital would be required for mains, meters, &c.; but the completion of the new works was now in sight, and the larger portion of the cost had been provided for. Still, spread over the next two years, a considerable amount of capital would be required on this account also. The aim of the Board all through had been to maintain and to increase the efficiency of the organization, and in this aim success had been achieved; while the Company had never been in a position of greater strength to cope with the ever-changing problems that from time to time presented themselves for solution. With new works designed and conducted on modern lines, and with the distribution system thoroughly complete and efficient, there lay before the Company a future of the greatest possibilities. It was always a pleasure to acknowledge the services of the principal officers of the Company, to whom the thanks of the Directors were given; and in due measure and degree the same was true of the inferior officers and likewise of the workmen.

The report was adopted.

GAS v. ELECTRICITY IN SOUTHWARK.

Effect of Incandescent Gas Lighting.

At the Meeting of the Southwark Borough Council on Wednesday, the Electric Lighting Committee presented a long report giving the results of an inquiry which had been held as to the position of the electric light undertaking of the Council. They found that complaints as to the high price and bad illumination were frequent, and that there had been a reduction in the number of consumers during the past year; and they recommended that, as there had been a want of commercial tact and administrative ability on the part of the Resident Engineer (Mr. J. R. Blaikie), that he be given three months' notice to terminate his appointment. The Resident Engineer, in his reply to the criticisms of the Committee, adduced facts to show that the service was satisfactory as compared with other electric light supplies in the district, and went on to state: "It was pointed out during the inquiry that a complaint of bad light almost invariably meant as compared with incandescent gas lighting. The comparison with gas is, without doubt, a serious matter; but it is purely a question of price. I ascertained a few days ago that in a neighbouring borough they have lost about 60 consumers, or 11 per cent. of their total connections, up to date. A large proportion of these consumers who have reverted to gas were getting current at 2¾d. to 3d. per unit. The whole electric lighting industry has been checked by the improvements in gas lighting. On the other hand, developments in the Nernst type of lamp and others encourage the belief that electric lighting will still hold its own. It is somewhat gratifying, under the circumstances, to find in Southwark only about 17 cases of total or partial reversion to gas out of some 250; and in all these cases the price was high." In conclusion, the Resident Engineer threw the blame for the unpopularity of the undertaking on the lighting in the side streets, and stated that, in his opinion, frequently expressed to the Committee, the only possible use of incandescent electric street lighting was as an indication of the existence of supply mains in the side streets. Mr. Newman (the Chairman of the Committee) expressed his dissent from the report, and said he believed Mr. Blaikie had done as well as possible. Other members protested at what they described as an attempt to make a scapegoat of the Resident Engineer. In the result, the consideration of the report was adjourned for a month, to give Mr. Blaikie an opportunity of sending in his resignation. Mr. Newman said he would not do this unless the imputations against him were withdrawn.

THE LONDON COUNTY COUNCIL AND INCANDESCENT GAS LIGHTING.

Lighting of Woolwich Ferry and the Albert and Chelsea Embankments.

At the Meeting of the London County Council last Tuesday, the members had under consideration two reports by the Bridges Committee on the subject of incandescent gas lighting.

In one report, which related to Woolwich Ferry, the Committee reminded the Council that on the 7th of April last year they sanctioned an expenditure not exceeding £500 for renewing and fitting with incandescent burners the lamps on the pontoons of the Ferry. Subsequently, on the 20th of October, the offer of the South Metropolitan Gas Company to light and maintain the new lamps on the south pontoon for the sum of £10 3s. per quarter was accepted. At a later date the Committee asked the Gaslight and Coke Company to undertake similar work on the north pontoon; and the Company had expressed their willingness to carry it out for the sum of £12 per quarter. This was slightly in excess of the charge made by the South Metropolitan Gas Company; but, having regard to all the circumstances, the Committee considered that the offer made was reasonable. Provision had been made for the necessary expenditure, and they recommended—"That the offer of the Gaslight and Coke Company to renew and maintain the incandescent mantles and to light the lamps on the north pontoon at Woolwich Ferry, for the sum of £12 per quarter, be accepted." The recommendation was agreed to.

The other report contained a proposal to improve the lighting of the Albert and Chelsea Embankments. The Committee stated that at Woolwich Ferry and at Putney Bridge the incandescent system of lighting had been substituted for the ordinary gas-burners, with the satisfactory result that a greatly improved light was obtained, while the cost to the Council had been reduced. The Committee had therefore considered the desirableness of extending this system to the Albert and Chelsea Embankments; and they suggested that incandescent gas-burners should be fitted to ten of the lamps in front of St. Thomas's Hospital. In the event of these lamps proving a success, the Committee thought it might be desirable to arrange for the alteration of all the lamps on both of the Embankments referred to. In order to instal the incandescent system of lighting, it would be necessary to change the existing lanterns, which were not in very good condition. The new lanterns would cost about £5 5s. each, and the annual charge for maintaining the mantles, rods, and chimneys, and adjusting the burners periodically, would be 6s. per lamp. Each of the new lamps would give a light of 50-candle power, as compared with the 12-candle power at present given; and, moreover, the reduction in the cost of maintaining each lamp would amount to about 5s. per annum. The Committee added that they had made provision for the cost in their annual maintenance estimates, and they recommended—"That expenditure not exceeding £52 10s. be sanctioned for fixing new lamps with incandescent burners to ten of the lamp-standards on the Albert Embankment." Opposition being offered to the adoption of the report, its consideration was postponed until the meeting to-day.

THE MANAGEMENT OF TIVERTON GAS-WORKS.

Resignation of Mr. Littlewood.

The question of the management of the gas-works was under consideration at a meeting of the Tiverton Town Council yesterday week. A Sub-Committee appointed to investigate the business of the gas undertaking reported that they had visited the gas-works at Wellington, Yeovil, and Exmouth, and had considered the results obtained at many other works. They found that the results of the Tiverton works compared very unfavourably in almost every respect with these other cases. They felt obliged to recommend that there should be new management; and having informed Mr. W. Littlewood, the Manager, of this opinion, he had placed his resignation in the hands of the Council. The Sub-Committee also recommended that the two head stokers be given notice to leave; that a practical Gas Engineer be engaged to advise on the future organization of the works; and that a new Manager be engaged. A statement of accounts which was submitted showed that for the year ended March 31 last, the profit was £1549; and that, after meeting £1774 for interest and sinking fund, there was a balance of £175 to carry to the reserve fund.

Alderman J. THORNE, in moving the adoption of the report, said they only arrived at their conclusion after the most careful consideration. The accounts showed great improvement in the last quarter; and the year's result was very much better than that of last year, when £401 had to be taken from the reserve fund to meet the standing charges. The two head stokers had been paid 2s. a week extra for additional responsibility; and the Committee felt that they ought to co-operate for the advancement of the works.

Alderman AMORY said there had been a thoroughly unsatisfactory spirit at the gas-works. There was a regrettable want of cohesion, of self-respect, and of that pride which made the best workmen. With regard to the comparatively good results of the past year, he did not think they reflected any credit on the staff; they only brought clearly home what the staff had not done in the past. They showed that, under compulsion, much better results could be obtained; but they could not be perpetually driving either Manager or workmen.

Mr. WATKINS thought the Council ought to take some share of the responsibility, because of their slack supervision in the past.

The MAYOR (Mr. T. Lake) added that there was a lack of confidence between the Manager and the Council, and between the Manager and the workmen, and also of co-operation.

The recommendation of the Sub-Committee was then adopted.

A RECORD YEAR AT BURTON-ON-TRENT.

At their Meeting last Wednesday, the Burton Town Council had before them the accounts relating to the working of the Gas Department during the past twelve months. How satisfactory these were was fully explained to the members by Alderman Lowe, who, in moving the adoption of the report of the Gas and Electricity Committee, stated that the gas-works had had a record year, and that he was sure the Council would offer heartiest congratulations to the Engineer and Manager (Mr. F. L. Ramsden) on this splendid result.

In the course of his statement, Alderman Lowe said that, after paying interest and sinking fund, contributing £5000 to the relief of the rates, and allocating over £5000 to payment for meters, mains, and services, they still had the sum of £1847 to put to the reserve fund. This was equivalent to a net profit of over £12,000 on the year, which easily surpassed all previous records. This result had been brought about by a combination of exceptionally favourable conditions. In the first place, the average price of coal had been less than in the previous year, and the revenue derived from residuals had been remarkably good. They were sometimes reminded of the cheapness of gas in other towns; and Sheffield was frequently mentioned. But he would point out that the price Sheffield obtained for their residuals was more than they gave for their coal in the first instance; so that their exceptionally favourable position could be easily understood. There had been a check in the sales the previous year; but this had ceased, and there was now an increase of nearly 5 per cent. The Committee had devoted a great deal of time and money to dealing with the question of leakage; and he was glad to say that the unaccounted-for gas had been decreased from 11 per cent. to just under 10 per cent. But at present the cure was, in one sense, worse than the disease; for in the saving of £350 worth of gas they had spent, in the renewal of mains, services, &c., £2000. They hoped, however, to reap in the future a very considerable advantage from the money now being spent in this direction. Up to the present, the charges for meters, mains, and services had been put to capital; and short-period loans of about ten years' duration had been taken up for them. During the past few years this class of loan had rapidly increased, owing to the pushing of the slot-meter system, and loans for over £30,000 had been taken up for this particular purpose; so that this was a serious incumbrance upon the concern. The Council had also sanctioned further loans, to the amount of £12,000. The Committee had therefore come to the conclusion that it was not a wise policy to be over-burdened with too many short-period loans; and they were in a position to deal with them in a very satisfactory manner. When the slot meters were first introduced, the finances of the undertaking were not sufficiently strong to pay the cost out of revenue; but as time went on, they were hopeful of being able to do so, in the absence of exceptional circumstances. The annual amount required for this purpose was just about equal to the sum the Committee would be called upon to find for repaying the necessary loans; and the payment of interest would be obviated. On this occasion, the Committee were allotting a larger amount than usual, because they wished to wipe out within the next two years as much as they could of the considerable sum that had been overspent. They proposed to pay the amount out of the deterioration fund, and to replace it by contributions from revenue account of £5000 this year and £5000 next, if possible. If this policy were adopted, the town would benefit considerably. They would materially reduce the unpaid capital of the concern, the financial position would be consolidated, and the whole undertaking would be put upon such a footing as to be a real source of strength—such a position, in fact, as it had never occupied during his experience. In considering the past year's profit, it must be remembered that they had passed through a series of lean years, during which the department had become so impoverished that at one time the reserve fund was approaching vanishing point. Now that the market was in their favour, therefore, they should take full advantage of it, and do all in their power to consolidate their position. He proposed to give notice for a reduction in the price of gas for power purposes, which he hoped would stimulate this source of trade; but he trusted there would not at the present time be any disposition to ask for a general reduction in price simply on account of the large profits they had made in one year—profits which ought to be devoted to strengthening those resources which had been unduly drawn upon in the past. The undertaking should have time to consolidate its position, and not be crippled by demands for an all-round decrease in the price of gas.

Two of the members subsequently referred to the last portion of Alderman Lowe's speech. The first, Mr. Hutchinson, thought the appeal that they were not to cripple the gas-works was not justified. The fact still remained that one section of the community was being fleeced for the benefit of another; and it was not fair to boast of being able to keep down the rates, when they did it at the cost of the gas consumers. He therefore moved that the paragraph relating to the price of gas for engines be referred back, and that the Committee be asked to take into consideration a reduction of 3d. per 1000 cubic feet all round. On being informed, however, that in voting for the report he was not committed to the paragraph he sought to amend, he did not further pursue the matter. Mr. Reeve remarked that, in years when they had paid a higher price for coal, they made less profit; but the price of gas did not go up. There was therefore no reason why, after a good year, they should lower the charge. The profits should be regarded as an average over a series of years. Alderman Lowe, in reply to Mr. Hutchinson, said that the chief object the Committee had in view was the benefit of the general body of ratepayers.

The receipts from the sale of gas for the twelve months ending March 31 amounted to £44,120, as compared with £41,492 in the previous year; from street lighting, to £4704, against £4632; meter and stove rents, to £1223, against £1219; coke, tar, and lime, £10,406, against £8651; and ammoniacal liquor, £3985, against £3494. Other items, and stock in hand, brought the total receipts up to £66,626, as compared with £62,311 in 1902-3. The receipts for residuals were

about 70 per cent. of the cost of coal. On the other side of the account, coal cost £20,564, against £22,637; carbonizing wages and unloading, £5339, against £5268; purification £1128, against £1172; maintenance and general repairs of works, £3276, against £4202; renewal and repair of retorts, £1240, against £1173; repairs to mains and services, £1938, against £1419; rents, rates, taxes, and insurance, £3571, against £3579; street lighting (including the conversion of about one-third of the public lamps to the incandescent system), £1452, against £1079; and interest on, and repayment of, loans and stock, £9639, against £7531. The result was a gross profit of £21,982, and a net profit of £12,043; the corresponding figures being £15,227, and £6775 respectively. The make of gas also shows an increase from 10,303 to 10,455 cubic feet per ton; the total quantity made having been 390,305,000 cubic feet, as compared with 378,614,000 feet. The number of ordinary consumers increased during the year by 63, and of prepayment ones by 469.

THE CHARD GAS-WORKS PURCHASE QUESTION.

Dissatisfaction at the Cost.

The award of the Umpire in the arbitration proceedings relative to the purchase of the Chard Gas-Works by the Corporation was the principal subject discussed at the last monthly meeting of the Town Council. The MAYOR (Alderman S. H. Dening) presided; and, with one exception, the whole of the members were present.

The TOWN CLERK (Mr. W. J. Tucker) produced the award, and stated that the sum was £35,240, in addition to which the Corporation would, he believed, have to take over the mortgage debt of the Company, amounting to £5250.

The DEPUTY-MAYOR (Alderman F. Harris Mitchell) said the amount of the award was not only a great surprise to himself and to the other members of the Parliamentary Committee, but even to Mr. Valon, the Engineer whom they had employed, and who had had so much to do with the matter on their behalf. He had in his hand a letter from Mr. Valon, which would be read by the Town Clerk, in which he expressed his opinion upon the subject; and it would be instructive for the Council to know the view he entertained upon this matter. There was a great difference between the estimates of the two valuers—Mr. Corbet Woodall and Mr. Valon—for one set down a figure, roughly speaking, of £25,000, while the other gave £45,000. He (Alderman Mitchell) had every reason to think Mr. Valon's estimate would be supported by facts; and looking at the matter from a business point of view, but without expert knowledge, he considered Mr. Valon had more facts to support his figures than the other side had. The award specified that they would have to pay £35,240 *plus* the amount of the mortgage debt of the Company. The result was undoubtedly a very great disappointment to the Parliamentary Committee; but the Council must not think for one moment that what they were doing now would be a permanent injury to the town. He could only ask them to support the Committee in making arrangements for the transfer of the undertaking on the 23rd of June. He could assure the Council that no Committee had ever worked harder or more thoroughly than the Parliamentary Committee had done in this matter. If it were not for the heavy expenses which unfortunately had been incurred, there was no doubt the gas purchase would become a very paying thing for the Council. Never for one moment did he think that the costs would run into £5000 or £6000. The arbitration expenses were scandalously large. Such proceedings as these, on public policy, required a great deal of revision; and it was ridiculous that the Corporation should have been obliged to employ Counsel, when surely the two Arbitrators and the Umpire could have arranged the whole thing quite as easily. He would now ask the Town Clerk to read Mr. Valon's letter.

The TOWN CLERK complied. After a brief introduction, Mr. Valon said he was utterly at a loss to understand how the Umpire could have arrived at his decision. He sent with his letter a copy of his final report to the Umpire. This, he said, would show clearly that, in his opinion, the Umpire had given the Company £10,000 more than they were justly entitled to; and, having examined and put together the figures in several ways, he was unable to understand how Mr. Mansergh had arrived at his decision. Mr. Valon concluded by saying: "Personally, I extremely regret the result of the arbitration. Still, I think that the profit from the works in the not very far future will be sufficient to cover the interest on the capital outlay, large as it is; and with good management, and by popularizing as far as possible the use of gas, you will be able not only to pay your way, but in a few years have a margin on the right side which will recoup any loss you may sustain in the first instance. Until that time arrives, if the Corporation so desire it, we would be willing to advise them as to the management of their works without making any charge for our services beyond bare out-of-pocket expenses."

Mr. SMALL said, with regard to Mr. Valon's remark that he considered the purchase-money was £10,000 in excess, it was a curious one to make. He (Mr. Small) did not blame Mr. Valon for saying it; but, in all probability, if Mr. Corbet Woodall were consulted, he would say that the award was £10,000 too little. Was it not a fact that if a purchase clause had been inserted in the Gas Company's Bill in the first place it would have saved the town thousands of pounds?

The DEPUTY-MAYOR replied that the town would then have had to purchase upon a statutory basis, and they would have probably been granted a far smaller number of years to carry out the purchase. With regard to the amount they were now called upon to pay, it seemed to him, without casting any aspersions, that the figure might have been arrived at by almost anybody by striking the difference between the two estimates. He would say again that the Parliamentary Committee and himself had honestly worked in the best interests of the town; and without the heavy incubus of the expenses, they would have the very best bargain that the town had ever seen.

Mr. TOWNSEND said the Committee had grossly deceived the people of Chard by stating that the purchase would amount to £16,000, *plus* £2000 for expenses, when their own valuer submitted the figures at £26,000.

The DEPUTY-MAYOR: That included the £6000 spent by the Gas Company, which Parliament had allowed.

Mr. TOWNSEND said it was an unfortunate affair; but he had one crumb of comfort, for he saw that at a Council meeting in 1902, the present Deputy-Mayor, who was then Mayor, said "the rates of the borough would never be called upon to bear the expense of the management of the Gas Company. As an assurance to the Council, he would agree to make up all the loss during the first ten years, if they would give him 50 per cent. of the profits."

The DEPUTY-MAYOR remarked, with regard to his offer, that he received advice from their expert, and he considered he was perfectly justified in making it. Mr. Valon made a similar offer to him (the speaker); and what could he do more than rely on the opinion of a professional man of high reputation? He repeated the offer at Mr. Valon's suggestion. They must not jump at conclusions, because they were told, even now, that in less than ten years the gas undertaking was bound to be a paying concern. Mr. Turner, the Manager, had told him that the profits this year would be £2000. He wished to say again that he did not shirk any responsibility; for he hoped he had never been one to say a thing, and then, when circumstances altered, run away from it.

Mr. TOWNSEND said he was pleased Alderman Mitchell took his remarks in such a reasonable way. No one wished to see the gas undertaking become a paying concern more than he did, for he was a large ratepayer. As matters had turned out, he hoped they would all now pull together, and try to make what they had purchased profitable to the town.

Alderman GAWLER suggested that the Parliamentary Committee should continue to act, and report to the Council.

Mr. TOWNSEND thought the Gas Committee should meet with the Finance Committee and draw up a report.

The DEPUTY-MAYOR said this was a good suggestion.

Alderman GAWLER then formally moved that the Parliamentary Committee should form themselves into a temporary Gas Committee, and make arrangements for the necessary loan and the transfer of the gas-works, and report thereon.

This proposition was carried unanimously.

The members of the Chard Ratepayers' Association had the subject of the arbitration proceedings brought before them at their last monthly meeting. In the course of their report, the Committee stated that the award had only just been published, and they had not had time to fully consider it. They might, however, say that the amount was practically the figure (£50,000) they estimated it would be when presenting their report last year—viz.: The award, £35,240; the mortgages, £5250; estimated expenses of all kinds payable by the town, £6500; compensation to officers, purchase of stocks, &c., £3500—total, £50,490. The matter would have the careful attention of the Committee, seeing that the Parliamentary Committee of the Council stated that the maximum outside costs to the town, including all expenses, would not exceed £18,000; and it was on this estimate that the ratepayers were asked to vote for the purchase.

SOUTHPORT CORPORATION GAS SUPPLY.

A report has just been issued showing the position of the affairs of the Southport Corporation Gas Committee. The gross profit is £23,110, compared with £22,235 this time last year. The net profit, after appropriating the sum of £1987 17s. 10d. towards the cost chargeable to revenue account of £3215 for removing the water-gas plant, is £10,000, against £10,086 before. Though the charge for lighting gas was 4d. per 1000 cubic feet lower during the whole of last year as compared with three months of the previous year, yet such has been the great increase in the sale that the income is greater by £973. There is in hand the sum of £167, the balance on last year's account. The renewals fund stands at £4327; and the workmen's accident fund at £500—no demand having been made on either during the year. The profit realized in the past six years is as follows: In 1899, £15,147; in 1900, £10,323; in 1901, £5584; in 1902, £7923; in 1903, £10,086; and in 1904, £10,000. The following is the gross income from the sale of residuals, including stocks on hand, for this period: In 1899, £12,303; in 1900, £13,398; in 1901, £17,187; in 1902, £14,964; in 1903, £15,008; in 1904, £13,865. The estimated amount required for gas, electric current, provision of new lamps, &c., was £4640 10s. 11d.; the amount expended being £4601 17s. 9d.—a surplus of £38 13s. 2d. to be carried to the credit of the next estimate. The report on the estimates and expenditures of the various Committees for the year ending March 31 last shows: Gross estimated expenditure, £89,567; actual expenditure, £91,497—increase, £1930. Gross estimated income, £89,478; actual income, £89,474—decrease, £4.

The minutes of the Gas Committee came before the Town Council at their monthly meeting last Tuesday. In moving their adoption, Mr. Trounson, the Chairman, said, with regard to the £3215 for removing and re-erecting the water-gas plant, he desired that, including the balance of £167 left over, £2154 should be paid out of the revenue, and the remainder (£1061) out of the profit for the year ending March, 1905. This having been agreed to, Mr. Trounson said the Council would see that there had been an increase at the works, and they were already reaping the benefit of the centralization of the plant. They had a renewals account of between £4000 and £5000; and he thought the Committee had done wisely not to touch this amount. Mr. Austin said that for a long period he strongly criticized the Gas Committee; but they were now working on the right lines, and there was nothing to complain of. A great opportunity presented itself with their new Engineer (Mr. J. Bond) to make the splendid property at Crowlands one of the most prosperous business concerns in the country. They

all wished him success in the plans he had marked out, not only in the interests of the town, but for his own sake. The wisest thing for the Committee to do was to give him a free hand, if they wanted to secure the best results. Mr. Foggett said he wished to congratulate the former Manager (Mr. Booth) upon the results of his labour. He had done well for them, and had assisted them in bringing forward sums in aid of the rates. Mr. Trounson agreed with Mr. Foggett that, while an improvement had taken place, it was not through their new Gas Engineer, who had only carried out what they had been striving after for many years. Consequently, whatever credit was due, should be given to his predecessor. The minutes were then confirmed.

With reference to the foregoing remarks, it may be mentioned that Mr. Bond has already shown that he has a policy of his own. In the first place, he has taken the initial step in the direction of doing away with the existing brick retorts, and replacing them with others of fire-clay. Next, the sulphate of ammonia is in future to be sold on the basis of the percentage of ammonia contained in it, and not merely by weight. Another feature of the new management is the installation of a small plant for testing the oil used in the manufacture of gas. Mr. Bond's ideal is to supply gas of as nearly uniform quality as possible.

ELECTRIC LIGHTING AT HASTINGS.

More Money Wanted for Improving the Plant.

The Hastings Town Council had before them, at their meeting on the 6th inst., a long report from the Electric Lighting Committee setting forth the alterations and additions to the plant which the Electrical Engineer suggested should be carried out to make it more efficient. The total cost was estimated at £3416; and the Committee recommended that application should be made to the Local Government Board for their sanction to the borrowing of this amount, and that the Engineer should obtain estimates for carrying out the work. The adoption of the report having been moved and seconded, Mr. Boutwood said he felt it necessary to show that there were a number of gentlemen in the Council who were entirely dissatisfied with the electric light undertaking; and therefore he moved an amendment somewhat to the same effect as when in Committee, hoping that more would give him support. It was perfectly true that they were a body of forty gentlemen; but how many experts on the subject were there among them? Were they qualified to carry on such a technical business as the electric light undertaking? They were very much indebted to the painstaking Committee for their labours, and they gave them credit for their intelligence, and all felt admiration for the Chairman of the Committee; but this did not blind their eyes to the main facts of the case. They had the proposition before them to put into the concern £3416. Before it was too late, he thought it would be wise for the Council to consider whether it was the right policy to go on pouring into the concern these thousands of pounds they were asked for from time to time. Of course, he knew the reply was always made that a very large amount had to be repaid in interest and to the sinking fund, and that it could not be compared with an ordinary firm carrying on business. But it was because of this that they ought to hesitate before putting in any more capital. As year by year went by, there would, of course, be very great demands made upon them for new plant. Machinery which was purchased to-day, and saved a great deal of money, would be scrap iron in a few years; and consequently they would be compelled from time to time to find very large sums of money to carry on the business. He asked if it would not be better to dispose of the concern. There was no doubt they could do it at a profit; and he moved that the report be referred back, and that, in the meantime, the Committee ascertain if they could not dispose of the undertaking. Mr. Deck seconded the amendment, which, after some discussion, was put and lost by 7 votes to 27. Mr. Pelham then moved another amendment, to the effect that the question be allowed to stand over for twelve months. He said that when this matter first came before the Council in Committee, they were divided, and the proposal now before them, involving an expenditure of £3416, was carried by the casting vote of the Chairman. This was too important a question to be passed in this manner, and he hoped the burden, serious as it was, would not be put down upon the ratepayers. Mr. Harden seconded the amendment. On being put to the meeting, it was carried by 22 votes to 14. The Mayor (Alderman Tree) expressed the hope that the Council would never regret their decision; and Mr. Pelham raised a laugh by saying: "So do I."

ELECTRIC LIGHTING AT WEST BROMWICH.

A Questionable Profit Balance.

The West Bromwich Town Council had before them, at their last meeting, the third annual report of the Borough Electrical Engineer (Mr. John H. Wray) and the accounts of the Electricity Department for the year ended the 31st of March. The former showed that the total number of units sold in the twelve months was 1,105,006; being 819,158 units more than in 1902-3; while, according to the latter, the undertaking had produced, after allowing for the necessary instalments to the sinking fund, a profit of £1545. Alderman Pitt, in moving the adoption of the report, did so in a jubilant spirit; remarking that the progress made in the twelve months had been most gratifying, alike in regard to the number of units sold, the low cost of generation, and the amount of revenue received, considering the prices charged for current. The number of units sold in the year 1901-2 was 62,894, producing £680; in 1902-3, it was 285,848, bringing in £2756; while now the number was 1,105,005, for which £9315 had been received. The cost of generation per unit in 1902 was 4·48d.; in 1903, 1·81d.; and now, 1d. only. One of the most pleasing features of the past year was the low fuel cost per unit—0·41d. Having compared these figures with those of neighbouring places, Alderman Pitt concluded by saying that while the Corporation were one of the cheapest electric supply authorities, both for lighting and power, they were now able to make both ends meet and have a surplus. The Committee strongly recommended the Council to permit the balance to be put to a reserve fund, which would form a working capital, or to a depreciation fund, and prevent the undertaking having to pay for overdrafts at the bank. The motion having been seconded, Alderman Salter, while congratulating Alderman Pitt on the way in which he had put his figures before the Council, pointed out that, as shown by the Auditors' certificate, there was a sum of £952 which was in dispute with the Local Government Board, and which might have come out of the profits. Moreover, there was no allowance for depreciation in the accounts. If they were to set aside only 5 per cent. for depreciation, the profits shown would be swallowed up; but he thought they ought to allow at least 10 per cent. Alderman Pitt explained that the Contractor had to keep good two of the machines for twelve months, and another for two years, and he had also to keep the condensers right for a specified period. It was the intention of the Committee to put something by for depreciation; and they recommended that day that the whole of the balance should be placed to a reserve fund for this purpose. Alderman Salter repeated that more ought to have been allowed for depreciation than was shown. He repeated that if the Committee made proper allowance, the profit would disappear altogether. Mr. Wilson joined Alderman Salter in congratulating the Chairman of the Committee on what he considered a very excellent result of the year's working, though he agreed with the remarks which had been made on the question of depreciation, and considered that the amount allowed was nothing like sufficient. He thought they must not expect anything from the Electric Lighting Department in aid of the rates until this matter had been properly provided for. Mr. Brockhouse joined in the congratulations, but also agreed with the remarks concerning the depreciation. Mr. Baggott said they had turned what was a deficiency of upwards of £400 into a profit of £1545; and he thought this was very creditable. Alderman Pitt, in reply, said that, in whatever way they looked at it, the West Bromwich undertaking would compare favourably with those in neighbouring districts. In two years, when the responsibilities of the Contractors for the engines and boilers had ceased, the Electric Light Department would have extended its operations, and they would then be able to do more in regard to the depreciation fund. The report was adopted.

WEST MIDDLESEX WATER-WORKS COMPANY.

The Half-Yearly Meeting of this Company was held last Tuesday—Mr. Edmund Boulnois, M.P., in the chair.

The Secretary (Mr. F. H. Wybroo) read the notice calling the meeting and the report of the Auditors. This stated that the reserve fund remained the same as reported last half year; the amount invested in certain stocks being £60,050, in addition to an uninvested balance of £10,041. The Company had also the sum of £30,000 on deposit, at interest, with their bankers. The capital, as reported last half year, was £1,986,228; and the total expenditure on works to March 31 amounted to £1,967,432. In addition to the above capital, the amount of £20,500 had been raised during the past half year, to provide for the expenditure on intercommunication works. The gross rental for the half year to Lady Day last was £159,144; the water rental received during the half year to March 31 was £152,656; and the balance to the credit of the dividend and interest account was £64,024.

The Chairman, in moving the adoption of the report and accounts, pointed ont that a new capital account had been opened this half year of £22,000 3 per cent. debenture stock, which was raised at the price of nearly 94 per cent., to pay for the expenditure upon the intercommunication works. This account was kept separate from the main capital account, because it was not subject to the sinking fund; but this did not very materially affect the Company under present circumstances. The revenue account showed about the usual increase in the water-rental—that was, £900 over the last half year, and £4200 over the corresponding period of the previous year. There had been a general increase in the expenditure, which was due to various amounts spent on the works in order to keep them in the highest state of efficiency, which had always been done, and to increased cost for labour. The greatest increase was, however, in the law charges owing to the cost of the arbitration proceedings. Over £9500 of the amount was allowed on taxation against the Metropolitan Water Board; and this sum had been paid to the Company since the accounts were made up and circulated. The Directors informed the proprietors of the result of the arbitration immediately the award was given; and, in accordance with the Act, they had since prepared a scheme for the application and the distribution of the amount. A copy of the scheme was sent to each proprietor; and as no notice of dissent had been received, the scheme had become as binding upon all persons affected by it as if it were in the Act itself. The Board had determined to lay a new 30-inch main from Hammersmith, to provide supplies for the largely increasing number of houses and manufactories now being built in Willesden and Hampstead. This increase of supply meant, of course, a corresponding increase of revenue, which would be for the benefit of their successors, the Metropolitan Water Board. The latter received notice from the Directors that the Company proposed to lay this main; and they signified their approval to the proceeding. The proprietors would have observed that it was proposed to distribute the half-year's dividend earlier than usual, in order that it might be paid before the 24th prox., which was the day appointed for the transfer of the undertaking. He desired to say how much the proprietors and the Directors were indebted to the officers and staff of the Company. It was impossible for him to speak too highly of the zeal and attention which had always been given by them to the affairs of the Company, and he must especially allude to the skill in which their case before the Court of Arbitration was prepared by their Solicitor, Mr. Gillett, ably assisted by the Secretary, and by the Engineer, Mr. Rutter. The proprietors might well be proud that they handed over to their successors a really

magnificent business, which had been brought to the highest point of efficiency and prosperity by wisdom, care, and forethought.

The DEPUTY CHAIRMAN (Mr. Jackson Hunt) seconded the motion.

Mr. MORRIS remarked that the accounts were not signed by Mr. Stoneham, and inquired if any question had arisen with the Official Auditor in connection with them.

Mr. RIDDOCH pointed out that the Chairman had made no reference to the proposed division of the reserve fund.

The CHAIRMAN replied that he would refer later on to both the points raised. He then put the motion; and having declared it carried unanimously, he proposed the distribution of a dividend on the consolidated stock for the half year to March 31 at the rate of 10 per cent. per annum, payable, less income-tax, on and after the 13th prox.

The DEPUTY CHAIRMAN seconded the motion, which was carried nanimously.

The CHAIRMAN afterwards proposed: "That the Directors of the Company be, and they are hereby authorized and empowered to enter into an agreement with the Metropolitan Water Board, on behalf of the Company, for the purpose of accepting water stock in discharge, wholly or partly, of the compensation awarded to the Company for the transfer of their undertaking, upon such terms as to the price of issue of such water stock and in all other respects as the Directors, in their discretion, shall think fit; and the Directors may affix the common seal of the Company to any agreement they may enter into with the Water Board in accordance with the terms of this resolution." He stated that the Directors had most carefully considered with their Solicitor and with Counsel the best manner in which an agreement could be made with the Water Board for the issue of stock in lieu of payment in cash; and they were convinced that the means provided by the resolution were the only practical ones by which negotiations could be carried on and an agreement arrived at. There was little doubt that very many of the proprietors—especially in trust accounts, of which there were a great number in the Company's books—would prefer, instead of a cash payment, the substitution of water stock (on satisfactory terms) for their present holdings. The Directors would have liked to be able to give to each proprietor the option of taking cash or stock; but there would have been no possibility of giving the proprietors any idea of the terms on which the stock would be issued. Even if they could, so much time would have been occupied in the negotiations, and so much time would have been lost, that they felt the only course was to ask the proprietors to give them this authority, and to trust to them not to make any agreement which they did not consider fair and satisfactory. There would be no opportunity to consult the proprietors while the negotiations were going on, as during the time these would take circumstances might alter very much; and the Water Board would naturally refuse to enter into any agreement which would not be binding on both sides. Should no proposal be made by the Water Board, or should the resolution not be passed, the compensation would have to be paid entirely in cash at some uncertain date between the 24th prox. and Dec. 24; and many proprietors might not be able to find a good or suitable investment at the time they received their money and might thus incur loss. The Directors trusted that they would be able to make such terms with the Water Board as would ensure the proprietors their present income at least, and such terms that any proprietor who might prefer to have cash would be able at once to sell his water stock.

The DEPUTY CHAIRMAN seconded the motion, and remarked that he thoroughly agreed with what had fallen from the Chairman.

Mr. NETTLEFOLD said he thought that the resolution might be modified so as to give the Directors power to negotiate with the Water Board, but subject to the decision which might be come to between them being submitted to the proprietors. Many of them, he thought, would prefer taking cash to stock, which, issued in such a large quantity, was likely to depreciate considerably.

Mr. MORRIS observed that as the resolution stood, the proprietors had no option but to accept whatever proportion of stock or cash might be agreed to between the Directors and the Water Board.

Mr. BURN (of the Prudential Assurance Company) asked whether he understood that if the stock were not issued by the Company it would be issued by the Water Board, and whether, in that case, the shareholders, having been paid in cash, would have the option to purchase the stock. In that event, he thought they might possibly get better terms than by agreeing to accept stock in any case.

The CHAIRMAN replied that the proprietors did not so agree under the resolution, which he again read to the meeting. Continuing, he said he thought he had explained the physical impossibility, practically, of consulting each proprietor, owing to the time it would take and to the difficulties involved.

Mr. W. H. HARRISON said that he was a trustee, and, as he understood it, the proprietors would be entitled in any event to payment in cash if they so elected. They did not, however, yet know what offer would be made on the part of the Water Board, and, in effect, that would come out through the instrumentality of the agreement which might be entered into between that body and the Directors.

Mr. BURN inquired whether, if the resolution were passed, it would be at the option of the Directors to accept cash.

The CHAIRMAN: Certainly.

Mr. NETTLEFOLD said that the answer to this point was that the Water Board could not get the cash. It was pretty well known in the City that they could not issue the water stock at the present time, for it would be ridiculous to put £35,000,000 on the market now.

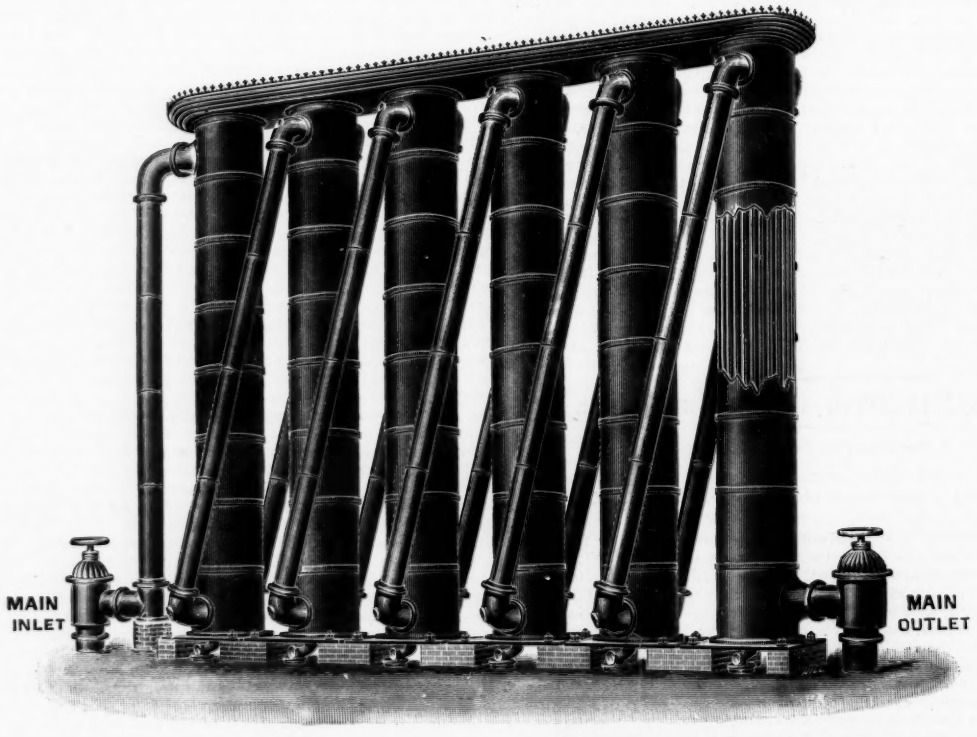
Col. DYSON LAURIE said he thought that, after the Chairman's assurance, the proprietors could not do better than leave the matter in the hands of the Directors.

Mr. MORLAND said he took it that the Directors had not received any intimation of an alteration in the appointed day—any postponement.

The CHAIRMAN replied that the Directors had heard of nothing to that effect. He then put the motion, against which two proprietors voted; but they afterwards agreed to withdraw their opposition to the extent of not voting against the resolution, which was thereupon put to

CONDENSERS.

WATER COOLING.



ATMOSPHERIC.

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the meeting again by the Chairman, and declared carried *nem. con.* He afterwards proposed the following resolution:

"That the reserve fund of the Company, being accumulated profits of the Company, be converted into cash, so that the same, together with all cash balances derived from revenue, may, on the appointed day, as defined by the Metropolis Water Act, 1902, be available for immediate distribution as dividend among the holders of consolidated stock of the Company, and be so distributed, if such a course is found to be legal, and that the Directors be and they are hereby authorized to sell the securities in which the said reserve fund is invested, and to apply the proceeds of any such sale for the general purposes of the Company, pending such distribution as aforesaid, and generally to do all acts on behalf of the Company which in their discretion they shall consider necessary for the purpose of giving effect to this resolution."

He stated that the Directors had been advised that, under certain conditions, they could distribute the reserve fund, and any cash balances shown on the accounts to the 24th prox., as further dividend among the proprietors. The matter now depended to some extent on the judgment of the House of Lords in the New River case. But independent proceedings were almost certain to be taken; and he was quite unable to say when the matter would be decided, and still more what the result might be. The resolution was required, as it might be necessary to deal with the reserve fund before the 24th prox.; so that it might appear in the accounts as part of the cash balances at that date. With reference to the proceedings which would almost certainly be taken to prevent their distributing the fund, it had already been noticed by a proprietor that the Official Auditor had not appended his signature to the accounts; and he had withheld it because he had objected to the Directors putting as "balance applicable to dividend" the sum of £64,024, which was more than was required to pay a dividend at the rate of 10 per cent. It would all depend on what the law said they might or might not do; but it was the duty of the Directors to take steps which would make the sum available if the law permitted it. He therefore proposed the resolution.

The DEPUTY-CHAIRMAN seconded the motion, which was carried.

The SECRETARY, in answer to a question, stated that the amount required for the dividend was £57,000; and Mr. Stoneham objected to the £64,024 being stated as being "applicable for dividend."

The retiring Directors and Auditors having been re-elected,

On the motion of Mr. D. HILL, seconded by Mr. NETTLEFOLD, a cordial vote of thanks was passed to the Chairman and Directors.

The CHAIRMAN, in acknowledging the vote, said he could honestly state that the Directors had endeavoured to protect the interests of the Company as far as they were able to. He did not know if this was the last meeting of the Company at which he would have to preside, but it might be; and on behalf of the Board he could only say that they would give up the directorate with feelings of regret and sorrow. It was possible that they might meet again, for so many changes took place that no one knew what to think; but if not, he thanked the proprietors, not only for their vote that day, but also for all their kindness to the Board who had presided over their affairs for so many years.

METROPOLITAN WATER BOARD.

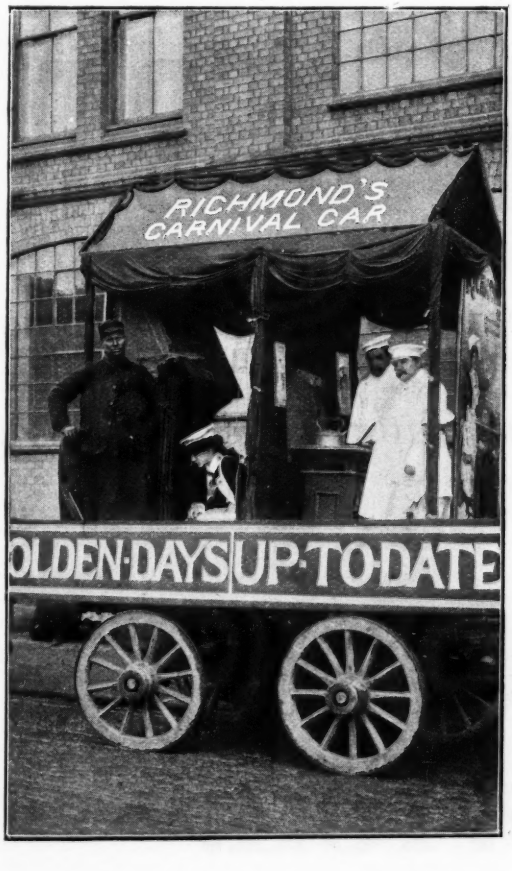
Chief Engineer to be Appointed—Central Offices for the Board.

A Meeting of the Board was held on Friday, at the offices of the Metropolitan Asylums Board—Mr. R. M. BEACHCROFT in the chair.

Among the first business was the consideration of a report by the Works Committee, in which they stated that they had had under consideration the steps to be taken in connection with the organization of the engineering department, and had decided to ask the Board to adopt the principle that a Chief Engineer should be appointed for the whole of the works to be transferred to them. If their proposal were adopted, they suggested that the salary attaching to the office should be £2500 per annum. The Committee recommended—"(*a*) That the Board do appoint a Chief Engineer; (*b*) that the appointment be made at a salary of £2500 per annum, and subject to the condition that the gentleman appointed do give his whole time to the service of the Board, and be not allowed to take any private practice or other paid employment; and (*c*) that an advertisement be issued inviting applications for the appointment, and that the applications received in response to the advertisement be referred to the Works Committee, with instructions to submit to the Board the names of three candidates whom they consider most suitable for the appointment." After discussion, the Board agreed to the recommendations, with the addition to the first of the words "who should give his whole services to the Board."

The General Purposes Committee reported that they had considered with the Law and Parliamentary Committee the desirability of framing general clauses respecting wages, hours and conditions of labour, and sub-contracting, suitable for insertion in contracts for the supply of goods or services to which the Board might be a party. With regard to the desirability of framing general clauses for insertion in the Board's contracts, they thought that, having regard to the custom so largely prevailing among public authorities in and about the Metropolis, the Board would also desire to make some provision on the subject of workmen's wages and conditions of labour. They recommended that the following clauses should be inserted in contracts for the supply of goods or services to which the Board might be a party: "(*a*) The contractor shall not, without the written permission of the Board, assign or sublet this contract or any part thereof; but this prohibition shall not refer to such subletting as may be customary in the trades concerned. (*b*) The contractor shall pay to all workmen employed by him in or about the execution of this contract, or any part thereof, such rates of wages, and observe such hours of labour, as in the district in which the work is to be executed are generally obtained and recognized by Associations of Employers and Trade Unions, and will throughout the execution of the contract prominently exhibit a copy of this clause in the workshops, and where work for the Board is carried on." The recommendation was adopted.

The same Committee also reported that they had had before them the question of the provision of chief offices for the Board, in view of



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the imminence of the "appointed day," and had carefully considered a number of suggestions. There was sufficient ground at the New River Company's premises in Rosebery Avenue to build a chief office; but, even if the Board at once decided to erect offices there, they could not be ready for occupation for some considerable time. The Committee therefore submitted the following recommendation. "That the estimate of £3600 submitted by the Finance Committee be approved as an estimate of costs, debt, or liability under section 20 (3) of the Metropolis Water Act, 1902, and that the Board do take on lease for a period of 21 years, terminable by the Board at the end of the fifth, seventh, or fourteenth year, the whole of the upper portion of the western block of the Savoy Hotel extension (save and except the ground floor shops in the Strand and the northern shop in Savoy Court) at a rent of £3500 per annum, exclusive of rates and taxes." Agreed to.

The Law and Parliamentary Committee reported, in reference to the attitude of the Board in regard to the Bill of the Barnet District Gas and Water Company, which it had been resolved to further oppose in the House of Lords, that a petition had been duly deposited against the Bill. The proposal in which the Board are specially interested is the construction of a well at Little Berkhampstead; and during the proceedings in the Committee of the House of Commons, it was stated that, if this were withdrawn, the Board would be willing to afford the Company a supply of water in bulk. As some doubt arose on this point, the Committee submitted the following recommendation showing the precise attitude of the Board with regard to the Bill: "That if the proposed power to construct a well at Little Berkhampstead be struck out of the Barnet District Gas and Water Bill, the Metropolitan Water Board will be willing to afford the promoters a supply of water in bulk equivalent in quantity to the supply which would have been obtained from the proposed well, on terms and conditions to be settled with the promoters by the Law and Parliamentary Committee." The recommendation was adopted.

The Special Arbitration Committee reported that they had received a letter from the Clerk of the New River Company announcing the intention of the Company to apply to the Local Government Board for the postponement of the "appointed day" for six months. The arrangements of the Board for the transfer of the undertakings, which were now well advanced, had proceeded on the assumption that all of them would vest in the Board on the 24th prox.; and it would be obvious that nothing but inconvenience could result from a postponement of the transfer in the case of one Company. The reason advanced for the postponement was that the appeal to the House of Lords had not yet been determined, and the case before the Court of Arbitration not yet closed. The Court of Arbitration, however, had throughout expressed the desire that the matter should be finished as soon as possible; and the Committee were hopeful that, under the special circumstances of the case, the House of Lords might decide that it was one of urgent public importance, and expedite the hearing of the appeal. It was agreed that the Local Government Board should be informed that the Water Board opposed the application.

NOTES FROM SCOTLAND.

From Our Own Correspondent.

Saturday.

A pleasant function was carried through at Kilmarnock on Tuesday, in the formal opening of the new Corporation Gas-Works (see page 445). The unpractised eye sees nothing the matter with the old works. They are in the best of order—in many respects quite model, well-arranged, tidily kept, and in every way up-to-date works. As a matter of fact, at the present time nearly half of the ovens in the retort-bench are being refilled. This is the result of the resolution not to throw away the old works, but to employ them for some years yet; the new works being gradually brought into use. But Mr. Fairweather, the Engineer and Manager, who knows his work, has foreseen that, from the rate of progression in the demand for gas, the time is not far distant when the old works would be too small; and he has also been convinced that any extensions which could be effected upon them would only give temporary relief, and would, consequently, not be profitable. Upon his advice, therefore, the new works have been erected; and not upon his advice only, but by his labour. He selected the site—which everyone who has seen admits to be a most advantageous one—and he and his son, Mr. Charles Fairweather, prepared the whole of the plans and specifications for the new works, and have superintended the erection from start to finish. That they have done good work, in both design and execution, is apparent to the visitor; and the latter has been proved by the experience of the past four months, during which time the works have been in use. No part of the works has required repair. They have not been shut down for doing up, which is so common an experience with new works. This is the best testimony which could be had of the care in the selection of the various apparatus, and as to the watchfulness of those who supervised the tradesmen. Reference was made in the course of the day to the want of ornamentation in the new works. This is not to be taken as implying that ugliness, or even plainness, has been played for. The aim has been efficiency and economy. Mr. Fairweather has accomplished both. The efficiency is a matter of daily experience; the economy in first outlay is an accomplished fact, as was brought out by Mr. Hepworth in his remarks at the dinner. Of course, it has to be kept in mind that the low capital liability upon the gas undertaking is largely the result of the early acquisition of it. Of a total amount borrowed (£54,000), the Corporation have repaid £25,000, or nearly half. They are thus in an exceedingly favourable position for further capital expenditure. It is one of the most commendable features of the scheme for the erection of new works that it has been undertaken before the pinch came.

Before leaving the subject of Kilmarnock, it falls to be mentioned that the Town Council, on Wednesday, voted Mr. Fairweather an honorarium of £100 for extra services in the designing and construction of the new works. They also reduced the price of gas to the

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consumers within the burgh from 2s. 11d. to 2s. 8½d. per 1000 feet, and advanced the price to those outside the burgh from 2s. 11d. to 3s. 1½d.

The Dumfries Town Council last week let the contract for the supply of a new station meter and bye-pass to Messrs. J. & J. Braddock, of Oldham, at the price of £540; and the contract for the supply of a governor and bye-pass to Messrs. Parkinson and W. & B. Cowan, Limited, of Edinburgh, at the price of £184.

The Broughty Ferry Town Council on Monday let their coal and other contracts for the year. They have purchased 6520 tons of coal at prices ranging from 9s. 8d. to 24s. 4d. per ton. A question arose as to the apportionment of the standing charges in connection with the Gas and Electricity Departments. The Managers of the respective departments reported that they had made several practical tests with a view to ascertaining the exact quantities of coke and water consumed by the boilers generating steam for the two works; and they recommended that the Electricity Department should pay the Gas Department for fuel used at the average rate of ¼d. per unit; that the price of coke used by the Electricity Department should be 6s. per ton; that the Gas Department should pay for water at the rate of 4000 gallons per day; that each department should be responsible for one-half of the charges for boiler maintenance; and that the Gas Department should pay for all electric current used in the gas works at the net cost of production. These recommendations were adopted.

At the meeting of the Arbroath Town Council on Monday, the contracts for the supply of coal were settled. The lowest price was 10s. 1d. per ton, and the highest 12s. The Manager—Mr. A. C. Young—reported the result of the past two years' experience in enriching the gas partly by shale, cannel, and benzol, and he advised that the same practice should be continued. The coal recommended to be purchased had been selected with that view. The Council approved. The Manager also reported that the introduction of the new scrubbing and washing plant erected last summer had increased the illuminating power of the gas – using the same coal—to the extent of between 2 and 3 candles. A report by Mr. A. Gillespie, of Glasgow, with reference to the sulphate plant, was submitted. He was of opinion that they should not expend the sum contemplated—£127—on the proposed alterations, but that they should adopt a still and heater of a larger capacity and more effective internal arrangements. On the assumption that the plant would be erected by the Corporation, the cost would be £253, and the alterations upon the buildings from £80 to £100 more. Mr. Robbie, in moving approval of these recommendations, said that they had made 6½ million cubic feet more gas this year than last, and yet the amount paid by the gas consumers was £1800 less. This showed that the consumers had full advantage of the reduction in the price of gas by 10d. per 1000 cubic feet. The Corporation had also saved 6d. per ton upon coal, which meant a saving of £200. With regard to the new scrubbing and washing plant, the benefits promised from it had been more than realized, because there would be an increase of from six to seven tons of sulphate over the estimate. The recommendations were all adopted.

At the Dunfermline Town Council on Thursday, it was reported that the Earl of Elgin is about to feu the land lying to the south of the Corporation Gas-Works, and the Gas Committee, in view of the probable future extension of the works, recommended that the Council should offer to take four acres of land alongside of them, at the same rate of feu-duty as they at present pay. Provost Macbeth said they expected that the town would extend southwards in the near future, and it would be a great calamity if they allowed the gas-works to be built round, and when they extended them be obliged to go elsewhere for land. It was proposed to run a street along the south side of the land they were to acquire. The recommendation was agreed to.

The Newburgh (Fife) Gas Company have had a more successful year than any for ten years past. They have earned a profit of £105, out of which the Directors propose to pay a dividend of 5 per cent., to add £50 to the reserve fund, raising it to £127, and to carry forward £87.

The Stirling Gas Company have reduced the price of gas from 3s. to 2s. 10d. per 1000 cubic feet; and the Bridge of Allan Gas Company from 3s. 9d. to 3s. 6d.

A Trade Union mass meeting was billed to be held on Saturday night last at Leith Links, under the auspices of the National Union of Gas Workers and General Labourers; the programme, according to the bill, being that a procession "with banners (headed by pipers)" should leave the foot of Leith Walk for the Links at half-past five o'clock. But the "procession," which consisted of less than a dozen people, including the two pipers, and the carriers of one banner, did not leave the foot of the Walk till after six o'clock, and instead of proceeding to the Links, just went along Great Junction Street, Henderson Street, Tolbooth Wynd, Kirkgate, and back to the foot of the Walk. There addresses were given by Councillor William Thorne and others; and a resolution calling upon workers in the district to become connected with their respective Societies was declared carried.

Winsford (Cheshire) Gas Supply.—At their monthly meeting on Wednesday, the Winsford Urban Council decided to reduce the price of gas to consumers of less than 300,000 cubic feet 3d. per 1000 feet; and to those burning more than this quantity, 2d. per 1000 feet. This makes the present price 3s. 9d., against 4s. 4d. when the works were acquired by the Council rather more than two years ago. The Gas Manager (Mr. F. Sidwell) stated that the total quantity of gas made in the past financial year was 19,001,800 cubic feet—an increase of 1,621,200 cubic feet, or 9·32 per cent., on the preceding twelve months. The quantity sold to private consumers was 14,652,100 cubic feet; being 785,900 cubic feet, or 5·66 per cent., more. During the year, the mains had been broken fifteen times, besides smaller fractures; and the result was that the unaccounted-for gas was 3,412,500 cubic feet, or nearly 18 per cent. The bulk of coal and cannel used was 1686¼ tons, and each ton had yielded 11,272 cubic feet of gas. The profit on the year was £1613, representing a dividend of 7 per cent. on the capital outlay.

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CURRENT SALES OF GAS PRODUCTS.

LIVERPOOL, *May* 14.

Sulphate of Ammonia.

Depression still hangs over the market, and a further decline in prices has to be recorded; the closing quotations being £11 18s. 9d. to £12 per ton f.o.b. at the ports. Shrinkage in Home consumption has been set off against increased exports, and, acting upon this view, speculators have been offering abroad freely at the equivalent of £11 15s. per ton f.o.b. for Summer-Autumn months. Makers have, consequently, become more anxious to dispose of their output, and any stocks they hold; while buyers find reason in the same facts for abstaining from the market as long as possible. For delivery ahead, makers have modified their views; but they are still above speculators' prices, and consequently first-hand selling has been in very small compass.

Nitrate of Soda.

On the publication of the increased maximum—36 million quintals—for shipment April, 1904—March, 1905, the forward market has become somewhat easier, but prompt delivery remains firm at 10s. 3d. to 10s. 6d. per cwt., according to quality.

LONDON, *May* 13.

Tar Products.

There is really very little doing except in carbolic acid, for which the demand continues very good. A considerable quantity of 60 per cent. crude has been sold at 2s. for May-September delivery, and as a rule makers ask 2s. 1d. and 2s. 2d. for July-December; but consumers do not appear anxious to purchase over the last three months of the year, and therefore do not respond to any advance in value for this period. Crystals remain steady. It is rather difficult to fix the price at present; but there are sellers of 39 40 per cent. at 6½d. in almost any position, while doubtless lower figures would be accepted for July-December. Some quantity of 90 per cent. benzol was sold at 9d. per gallon f.o.b. London for early shipment; but an offer of 8½d. f.o.b. Goole was declined for July-December delivery. Solvent naphtha continues very dull. There is a total absence of demand for export; while for home consumption sales are extremely limited. Very low prices are still quoted in the North, and in London there is also considerable depression. There is no business doing in toluol; but an offer of 6d. was declined by manufacturers for forward delivery. In creosote, a large business has been done in London, but at low prices; and it is reported that in some instances 1¼d. has been accepted. The market, however, appears to have been cleared of the large quantities which were depressing it; and the big makers as a rule now quote 1½d. per gallon, and do not seem very anxious to sell. In the North, the demand continues fairly good, although prices are slightly lower; and it is extremely difficult to obtain any advance on existing values for forward delivery. The market for pitch continues in a very depressed state; and there is very little business doing. The South Wales fuel makers are reported to have covered their requirements for the present year; but there is still a little inquiry for January-June, 1905. On the Continent, consumers will only entertain business for next season, and appear to anticipate still lower prices. The Belgian consumers seem to be well supplied for the next three or four months; and it is extremely difficult to say what is their actual position as regards supplies for next season. Some small sales in anthracene are reported, at prices varying from 1½d. to 1¾d. per unit, according to quality. These sales are purely for prompt delivery, as makers decline to sell forward, except at a considerable advance on existing prices.

The average values during the week were: Tar, 17s. to 22s. 6d. Pitch, London, 32s. 3d. to 32s. 6d.; east coast, 32s.; west coast, 31s. Benzol, 90 per cent., 9d.; 50-90 per cent., 7d. Toluol, 6½d. Crude naphtha, 3d.; solvent naphtha, 6½d. to 8d.; heavy naphtha, 10d. to 10⅜d. Creosote, London, 1⅛d. to 1⅜d.; North, 1¼d. Heavy oils, 2⅛d. to 2¼d. Carbolic acid, 60 per cent., 2s. Refined naphthalene, £5 to £8; salts, 22s. to 24s. Anthracene, "A" quality, 1¾d. to 2d.; "B" quality, 1d., nominal.

Sulphate of Ammonia.

The market has been very quiet all the week, and closes with a decidedly easy tone. Beckton still quote £12 1s. 3d.; but consumers would not pay this price, as there are second-hand sellers on Beckton terms at £11 17s. 6d. The South Metropolitan Company still ask £12 3s. 9d. on their own special terms; but there is no business possible at this figure. Sales are reported in Hull at £12 1s. 3d. for prompt; but the market closes with a quiet tone, and there is an absence of demand for June. In Liverpool, several small sales have been made at £12 for prompt delivery; but buyers do not seem to take any interest in forward business at this port. There has been very little doing at Leith, as makers decline to accept the current prices; but dealers are reported to have sold at £12 1s. 3d. in several instances. The market closes with a quiet tone, and the value may be taken as from £12 to £12 2s. 6d., according to make and period of delivery.

Finances of the Southport Water Board.—The Finance Committee of the Southport, Birkdale, and West Lancashire Joint Water Board have had under consideration their annual budget statement. There is a deficit of £10,000, which will be met by a rate-in-aid of 5⅜d. in the pound, against 4½d. last year. The redeeming feature in the accounts is that the revenue shows a net increase on the twelve months of nearly £1000. The deficit is accounted for by the abolition of the charge on the first closet; the new assessments, which mean over the whole area about £2500; and the high rate of bank interest. The Board bought the concern on a 3 per cent. basis; and they have not been able to borrow money at less than 3½ per cent. during the past two years.

THE
MAXIM PATENT CARBURETTOR
FOR ENRICHING GAS IN BULK.
PREVENTS NAPHTHALENE DEPOSITS.
OVER 120 MAXIM PATENT CARBURETTORS HAVE NOW BEEN FIXED.
Among the Companies and Towns supplied are The Gaslight and Coke Company, The South Metropolitan Gas Company, Birmingham, Leeds, Rochdale, Bristol, Sheffield, Oldham, Dundee, Perth, Dunfermline, and many other Works, both large and small, where they have been working in some instances for the past Ten Years.
MORE GAS & SALEABLE COKE PER TON of COAL CARBONIZED is PRODUCED; SAVING CAPITAL, LABOUR, FUEL, WEAR & TEAR, &c.
THE ENRICHMENT IS INSTANTANEOUS AND PERMANENT.
The Carburettor is inexpensive, easily fixed, and entirely supersedes the use of Cannel.
Dealers in Benzol, Carburine, and all other Naphthas and Oils suitable for the Enrichment or Production of Gas.
For Prices and full Particulars, apply to
THE GAS LIGHTING IMPROVEMENT COMPANY, LIMITED,
18, DEVONSHIRE STREET, BISHOPSGATE, LONDON, E.C.

COAL TRADE REPORTS.

Lancashire Coal Trade.

There is comparatively little or nothing further of any definite character to report with regard to the gas coal trade beyond the contracts already settled, to which reference has previously been made. There have been only one or two further inquiries coming upon the market, and these of no great importance. Practically the position remains much as reported last week. Actual contract prices can scarcely as yet be said to have been definitely settled, and 7s. 9d. to 8s. per ton for common gas coals, 8s. 6d. to 9s. for better qualities, and 9s. 6d. to 10s. for good screened Arley can only for the present be given as nominal quotations. In house-fire coals, the demand is rapidly falling away, and many of the pits are not putting in more than three days per week, with four days about the full general average. Prices, although without further quoted reductions, remain weak, and concessions here and there become necessary to meet competition from outside districts, particularly Derbyshire and Yorkshire, who are sending round coal into Lancashire markets at very low-cut figures. The Lancashire pit prices remain about 13s. to 14s. per ton for best Wigan Arley, 11s. to 12s. for seconds Arley and Pemberton four-feet, and 9s. to 10s. for common house-fire coals. Steam and forge coals remain in a very unsatisfactory position. To move away quantities prices are frequently cut excessively low; 7s. 9d. to 8s. 6d. per ton at the pit becoming very average figures at which business of any moment is being put through, with 8s. 3d. to 8s. 6d. for the better qualities. For shipment especially there are some very low prices ruling, and good ordinary descriptions of steam coal are readily obtainable at about 9s. per ton delivered at the ports on the Mersey, which would represent about 7s. 3d. per ton at the pit. Of slack, there are continued plentiful supplies, notwithstanding the short time that pits are running. For the better sorts, collieries are generally holding to late rates, ranging, according to quality, from 5s. 6d. up to 6s. 6d. per ton at the pit. Common descriptions, however, have to meet so much competition from outside districts that all sorts of prices are ruling to effect clearance. Lancashire slack is obtainable at from 3s. 9d. and 4s. to 4s. 3d., with Derbyshire slacks quoted as low as 1s. 6d. to 2s. per ton at the pit.

Northern Coal Trade.

The coal trade is still quiet, though the steam coal collieries are fairly well employed; but some of the Durham pits are rather short of work. Best Northumbrian steam coals vary from about 10s. 6d. to 11s. per ton f.o.b., according to time of delivery; but there is not the pressure that is sometimes known at this season. Second-class steams are 9s. per ton f.o.b., and steam smalls from 4s. 6d. to 5s. In gas coals, the consumption is much less now, and the deliveries to the great companies are about at the lowest point for this season. Durham gas coals vary in price from 7s. 7½d. up to 8s. 3d. per ton f.o.b., according to quality and period of delivery. Few contracts have been made of late; but the Darlington Corporation, in renewing the contracts for their supply, have bought part from Yorkshire—an unusual purchase. The production of gas coke being now very limited, the quotation is firm at about 13s. per ton for good quality f.o.b. in the Tyne.

Scotch Coal Trade.

Trade is quiet, orders being scarce. Splint is getting to be plentiful; and stocks are accumulating. For other sorts an outlet is still being found. The prices quoted are: Main 7s. 3d. to 7s. 6d. per ton f.o.b. Glasgow, ell 8s. to 9s. 6d., and splint 8s. 3d. to 8s. 6d. The shipments for the week amounted to 237,904 tons—a decrease of 27,049 tons upon the preceding week, but an increase of 22,316 tons upon the corresponding week of last year. For the year to date, the total shipments have been 3,621,712 tons—an increase of 127,244 tons upon the same period of last year.

Humphrey Lamps in an Eastbourne Church.—An installation of lamps on the Humphrey system (which was described in the "JOURNAL" for the 5th ult.) has just been fitted up in the nave of All Saints' Church, Eastbourne, and is said to be giving great satisfaction. There are ten 500-candle power lamps; and the total quantity of gas used costs a little under 7d. her hour, in addition to which, of course, there is the expenditure on mantles. The old form of lighting (which gave an illumination of 1500 candles, as compared with the present 5000 candles) cost 1s. 8d. per hour for gas. The one now referred to is the fourth local church in which quite recently incandescent lighting has been installed by the Eastbourne Gas Company, whose zeal in this direction has already been referred to in our pages. The great economy in cost and improvement in lighting which has been effected in these cases will doubtless induce other places of worship to follow suit.

Ticehurst and Robertsbridge Water Supply.—An important stage in the history of the Ticehurst and Robertsbridge Water Company was reached on Wednesday, when Lord Brassey, at the invitation of the Directors, performed the ceremony of cutting the first turf in connection with the construction of a reservoir at Burwash Common, Sussex. The parishes to be supplied by the Company are Ticehurst, Etchingham, Salehurst, and Burwash, comprising a population of 8000. The first section to be supplied will be Ticehurst and the neighbourhood, the town of Burwash, and the hamlets of Burwash Weald and Burwash Common. The sinking of the well was commenced at the end of May, 1903, and completed on the 15th of September, when a continuous pumping test, extending over 20 days, was carried out. During this time an average of 278,000 gallons of water was pumped from the well per day, or nearly 6 million gallons during the trial. The reservoir will have a capacity of 150,000 gallons, and is situated on the highest ground in the district. The mains, which have been nearly all laid, will be of a total length of about nine miles; and the Company confidently believe they will have the work so far completed as to be able to lay the water on by about the end of July.

CARBURETTED WATER-GAS APPARATUS

Merrifield—Westcott—Pearson Patents.

The Economical Gas Apparatus Construction Co., Ld.

W. H. PEARSON, Chairman.
W. H. PEARSON, Junr., Deputy-Chairman.
J. T. WESTCOTT, Manager.
L. L. MERRIFIELD, M.Inst.M.E., Engineer.

London Offices: 19, ABINGDON STREET, WESTMINSTER, S.W.
American Offices: TORONTO. TELEGRAPHIC ADDRESS: "CARBURETED, LONDON."

CARBURETTED WATER-GAS ENGINEERS.

The above Company have erected since 1893, or are now erecting, their Universal Type of Carburetted Water-Gas Plant at the following Gas-Works:—

	Cub. Ft. Daily.		Cub. Ft. Daily.		Cub. Ft. Daily.
BLACKBURN	1,250,000	ST. CATHERINES (Remodelled)	250,000	TONBRIDGE	300,000
WINDSOR ST. WORKS, BIRMINGHAM	2,000,000	KINGSTON, PA.	125,000	STRETFORD	500,000
SALTLEY WORKS, BIRMINGHAM	2,000,000	PETERBOROUGH, ONT.	250,000	OLDBURY	300,000
COLCHESTER	300,000	WILKESBARRE, PA.	750,000	TODMORDEN	500,000
BIRKENHEAD	2,250,000	ST. CATHERINES (2nd Cont.)	250,000	SALTLEY, BIRMINGHAM (Third Contract)	2,000,000
SWINDON (New Swindon Gas Co.)	120,000	BUFFALO, N.Y.	2,000,000	YORK (Second Contract)	750,000
SALTLEY, BIRMINGHAM (Second Contract)	2,000,000	WINNIPEG, MAN.	500,000	ROCHESTER (Second Contract)	500,000
WINDSOR ST., BIRMINGHAM (Second Contract)	2,000,000	COLCHESTER (Second Contract)	300,000	NEWPORT (MON.)	250,000
HALIFAX	1,000,000	YORK	750,000	TOKIO, JAPAN	1,000,000
TORONTO	250,000	ROCHESTER	500,000	PERNAMBUCO (Brazil)	125,000
OTTAWA	250,000	KINGSTON, ONT.	300,000	MALTON	150,000
LINDSAY (Remodelled)	125,000	CRYSTAL PALACE DISTRICT	2,000,000	DULUTH, MINN. (2nd Cont.)	300,000
MONTREAL	500,000	DULUTH, MINN.	300,000	BROCKVILLE (ONT.)	250,000
TORONTO (Second Contract Remodelled)	2,000,000	CATERHAM	150,000	SMETHWICK	500,000
BELLEVILLE	250,000	LEICESTER	2,000,000	GRAVESEND	300,000
OTTAWA (Second Contract)	250,000	ENSCHEDE (HOLLAND)	150,000	NEWPORT MON. (Second Contract)	250,000
BRANTFORD (Remodelled)	200,000	BUENOS AYRES (RIVER PLATE CO.)	700,000	TORONTO (Third Contract)	750,000
		BURNLEY	1,500,000	TORONTO (Fourth Contract)	1,000,000
		KINGSTON-ON-THAMES	1,750,000	MONTREAL, ONT. (2nd Cont.)	1,800,000
		ACCRINGTON	500,000	HAMILTON, ONT.	400,000

Complete Gas-Works at NELSON, BRITISH COLUMBIA.

LEEDS, 1,800,000 C. Ft. LEICESTER (2nd Cont.), 1,000,000 C. Ft. NEWCASTLE-ON-TYNE, 1,800,000 C. Ft.
AND, IN ADDITION, 8,000,000 CUBIC FEET DAILY.

Flint in Darkness.—Owing to an accident to one of the retorts at the Flint Gas-Works, the town was suddenly enveloped in darkness on the night of last Saturday week, and some of the business premises had to be closed. None of the places of worship were lit by gas on the following day.

Newport (Mon.) Water Supply.—The Wentwood water scheme of the Newport County Borough Council, which has taken ten years to carry out, and has involved an outlay of £400,000, is practically completed, and on the 31st inst. Mr. W. C. Phillips, the Mayor, will perform the ceremony of turning on the water. The reservoir contains from 75 to 80 million gallons of water. Something still remains to be done; but the works have now reached such a stage that the water can be utilized if required.

Electric Street Lighting at Maidstone.—Referring to an instruction of the Maidstone Electric Lighting Committee to the Borough Engineer to make some arrangement for the better lighting of the public lamps, the "South Eastern Gazette" remarks that "this recognition of the failure of the present system of street lighting by electricity comes rather late. The darkness of many of the thoroughfares in which the new illuminant has been introduced has been a subject of general complaint from the first; but up till the present it has always been contended, by way of reply, that the apparent deficiencies of electricity as compared with gas were purely an optical illusion—a contention which has been backed up by nice scientific calculations. The evidence of the eye, however, in a matter of this kind, is worth more than all the scientific data in the world; and the Electric Lighting Committee are to be congratulated on having at last adopted this view."

Water-Works Profits at Ipswich.—The published accounts of the Ipswich Water Commitee show that for the year ended March 31 the water-rental amounted to £17,281, compared with £16,546 the preceding twelve months; and sundry receipts for repairs, &c., brought up the total to £17,525. The working expenses totalled £6326, or a decrease of about £150; and the actual profit realized, without taking loans into account, was £11,198. After deducting repayment and interest on loans, there remained £858 net profit, as compared with £49 the previous year. The balance from revenue account in 1902 was £3463; making the total under this head £4321. From this, however, there had to be deducted the fee of £420 to the Engineer (Mr. Hamlet Roberts) in connection with the making of the new reservoir—leaving a net working balance in hand of £3901 odd. The liabilities on capital account have been increased from £279,653 to £287,315, owing to the expenditure on the new reservoir. It was stated that the water-rental was the largest experienced since the purchase of the works by the Corporation.

The gas accounts of the Stourbridge Urban District Council for the last twelve months show a gross profit of £10,084. The net profits are £2465. Half of this sum is to be applied to the rates, and is equal approximately to 5½d. in the pound.

The Tavistock Lighting, Coal, and Coke Company, Limited, having notified their intention of issuing 1000 new shares, of £5 each, to increase their capital by £5000, to provide for new works and plant on a fresh site, received up to last Saturday, when the list closed, applications for 2327 shares, or £11,635 of capital.

Messrs. F. C. Sugden and Co. have had repeat orders placed with them for semi-deep regenerator settings by the Ely and Kirkburton Gas Companies. They have also received orders for similar settings from the Blaenavon Gas and Water Company, and for a complete installation from the Strabane Urban District Council.

We understand that the Board of Directors of Messrs. John Wright and Eagle Range, Limited, have granted a month's leave of absence to Mr. J. W. Hall, their traveller in the eastern and southern districts. Mr. Hall has been ordered a sea voyage by his medical adviser; and he is proceeding immediately to the Mediterranean. It is sincerely to be hoped that the result will be a complete restoration to health.

A fire broke out on Monday of last week at the works adjoining the North-Eastern Railway passenger station at York, where the compressed oil-gas used for lighting the carriages is stored. It is stated that a drum, in which was a large quantity of hydrocarbon obtained from the process of compressing the gas made from shale oil, became heated from the furnace of the boilers; and the gas ignited, and ran along a line under some trucks, which were set on fire. The roof of the stores, in which were a considerable number of cylinders filled with gas, also got alight; but half-an-hour sufficed to get the flames completely under control.

The exhibits at the St. Louis Exhibition are divided in 15 departments, sub-divided into 144 groups, and these again separated into 807 classes. The British exhibit is a collective one, organized by a Royal Commission. We learn from the "Chemical Trade Journal" that the Chemical Section is a fairly representative one, including the productions of Messrs. Brooke, Simpson, and Spiller, Limited (coal-tar products), Brunner, Mond, and Co. (ammonia-soda products), F. C. Hills and Co. (ammonia products), Levinstein, Limited (coal-tar products and colours), Newton, Chambers, and Co. (disinfectants in commercial forms), and Read Holliday and Co. (coal-tar compounds and colour derivatives.)

Last week, an interesting exhibition was held, under the auspices of the Whitby Gas Company, in the Temperance Hall in that town. Cooking appliances were supplied by Messrs. John Wright and Eagle Range, Limited; and, in addition, Lucas and other forms of incandescent burners were shown. The exhibition was opened on Tuesday by Mr. F. Richardson, the Chairman of the Gas Company; the Secretary (Mr. W. M. Galleway) and Manager (Mr. F. J. Walker) being in attendance. Mr. Richardson having briefly explained the object of the exhibition, it was formally declared open. Mr. C. Laughton, Messrs. Wright's representative, subsequently made a few remarks on the advantages of cooking by gas. These were demonstrated in lectures by Mrs. Laughton during the period of the exhibition, which were well attended. The exhibition closed on Friday.

PARKINSON'S

SLOT INSTALLATIONS

FOR QUOTATIONS

WRITE—

PARKINSON AND W. & B. COWAN, LTD.
(*Parkinson Branch*),
COTTAGE LANE, CITY ROAD, LONDON.
BELL BARN ROAD, BIRMINGHAM.

The Wellingborough Gas Company, Limited, have placed an order with the Chemical Engineering Company and Wilton's Patent Furnace Company for one of their round open saturators for the production of 3 tons of salt per day, and also for one of their patent spent liquor valves.

The Richmond Gas Stove and Meter Company, Limited, put two decorated cars into a Hospital and May Day Carnival held at Stratford on the 2nd inst. The left-hand side of the car had an excellent representation of an old-fashioned chimney-piece, with a wood log fire. It was lighted with candles, and the place generally looked dirty, dismal, and dull. The right-hand side showed a Richmond cooker working, supplied with compressed gas. While the car went the round of the route, food was cooked, and a kettle was steaming merrily away the whole time. It was illuminated by the latest methods of lighting; and its bright appearance made a fine contrast. The car was considered one of the best in the procession.

Messrs. Kirkham, Hulett, and Chandler, Limited, have received orders from the Ilford, Barnet, and Wadhurst and Ticehurst Gas Companies for patent "Standard" purifying grids. The Barnet District Gas and Water Company have also ordered from the firm one of their improved patent "Standard" washer-scrubbers for a million cubic feet of gas per day.

A party of members of the Nottingham Mechanical and Electrical Engineers' Guild recently visited the Boughton Water-Works of the Corporation. The arrangements had been made by Alderman Jelley, the Chairman of the Water Committee, and the party were conducted over the works by Mr. F. W. Davis, the Engineer, who gave an interesting and instructive description of them. It was explained that the water was obtained from the new red sandstone formation, and was pumped a distance of 16 miles to the reservoir at Redhill, which is about 280 feet higher than the pumping-station. The quantity of water thus pumped is equal to 40 million gallons monthly.

WANTED, FOR SALE, CONTRACT, &c., ADVERTISEMENTS IN THIS WEEK'S "JOURNAL."

Situations Vacant.

MANAGER. Heckmondwike Gas Company. Applications by June 1.
AGENT FOR FIRE-CLAY GOODS. No. 4204.
TRAVELLER OR REPRESENTATIVE. "Refractory," care of Streets, Cornhill.
DRAUGHTSMEN. No. 4209.
DRAUGHTSMEN. Jenkins and Co., Retford.
CLERK OF WORKS. No. 4210.
WORKING MANAGER. No 4208.
WORKING MANAGER. Ibstock Gas-Works.

Situations Wanted.

ASSISTANT MANAGER. No. 4178.
MANAGER OR WORKING MANAGER. No. 4203.

Plant, &c., for Sale.

CONDENSER (250,000 feet). Redditch Gas-Works.
GAS ENGINE. King's Lynn Gas-Works.
GAS PLANT AND BUILDINGS. Happisburgh Lighthouse, Norfolk. Auction. June 7.
"JOURNAL" AND "GAS WORLD" VOLS. No. 4207.
PURIFIERS, &c. Blyth and Cowpen Gas Company.
SULPHATE OF AMMONIA PLANT. Arbroath Gas Department.

Plant, &c., Wanted.

PURIFIERS. Brackley Gas-Works.
RETORT. No. 4205.

Shares Wanted.

Martin, Streatham.

Stocks and Shares for Sale.

CANTERBURY GAS AND WATER COMPANY. May 18.
CLEETHORPES GAS COMPANY May 27.
DEAL AND WALMER COMPANY. May 24.
HASTINGS AND ST. LEONARDS GAS COMPANY. June 7.
SOUTH ESSEX WATER COMPANY. June 7.

TENDERS FOR

Benzol.

LEEK URBAN DISTRICT COUNCIL. Tenders by May 30.

Breeze.

SWANSEA GAS COMPANY.

Coal and Cannel.

BARNOLDSWICK URBAN DISTRICT COUNCIL. Tenders by May 25.
BRIGHOUSE GAS DEPARTMENT. Tenders by June 1.
BRISTOL GAS COMPANY. Tenders by June 1.
CIRENCESTER GAS COMPANY. Tenders by June 2.
CLITHEROE GAS DEPARTMENT. Tenders by May 28.
DEVONPORT GAS DEPARTMENT. Tenders by May 25.
DROITWICH GAS DEPARTMENT. Tenders by May 26.
EAST DEREHAM URBAN DISTRICT COUNCIL. Tenders by May 30.
FARNHAM GAS COMPANY. Tenders by May 31.
GLOUCESTER GAS COMPANY. Tenders by June 1.
LEEK URBAN DISTRICT COUNCIL. Tenders by May 30.
LURGAN GAS COMPANY. Tenders by June 6.
MANSFIELD GAS DEPARTMENT. Tenders by May 30.
MILTON-NEXT-SITTINGBOURNE. Tenders by May 23.
NEWRY GAS DEPARTMENT. Tenders by June 1.
NORMANTON GAS COMPANY. Tenders by May 27.
OXFORD GAS COMPANY. Tenders by June 11.
PAIGNTON GAS COMPANY. Tenders by June 11.
PONTYPRIDD GAS DEPARTMENT. Tenders by June 6.
SKIPTON GAS DEPARTMENT Tenders by June 6.
SOWERBY BRIDGE GAS DEPARTMENT. Tenders by May 25.
SUTTON, SOUTHCOATES, AND DRYPOOL GAS COMPANY. Tenders by May 25.

Coal and Cannel (*continued*).

SWADLINCOTE GAS DEPARTMENT. Tenders by June 1.
TIVERTON GAS DEPARTMENT. Tenders by June 4.
TORQUAY GAS DEPARTMENT. Tenders by May 31.
UTTOXETER GAS COMPANY. Tenders by June 6.

Gasholder.

SHEFFIELD GAS COMPANY. Tenders by June 6.

Lime.

BRIGHOUSE GAS DEPARTMENT. Tenders by June 1.
SWADLINCOTE GAS DEPARTMENT. Tenders by June 1.

Pipes and Connections.

CLACTON URBAN DISTRICT COUNCIL. Tenders by May 30.
EXMOUTH GAS COMPANY. Tenders by May 17.

Tar and Ammoniacal Liquor.

ACCRINGTON GAS AND WATER BOARD. Tenders by June 3.
LEEK URBAN DISTRICT COUNCIL. Tenders by May 30.
MANSFIELD GAS DEPARTMENT. Tenders by May 30.
NEWHAVEN GAS COMPANY. Tenders by May 31.
REIGATE GAS COMPANY. Tenders by May 31.
SUTTON GAS COMPANY. Tenders by May 31.
SWADLINCOTE GAS DEPARTMENT. Tenders by June 1.

GAS AND WATER COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 435.

Issue.	Share.	When ex. Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
590,000	10	Apl. 14	10½	Alliance & Dublin 10 p.c.	19½—20½	..	5 2 5
100,000	10	"	7½	Do. 7 p.c.	13—14	..	5 7 2
200,000	5	May 12	6½	Bombay, Ltd.	6—6¼*	+¼	5 4 0
140,000	5	"	6½	Do. New, £4 paid	4⅝—5¼*	+¼	4 18 11
380,000	Stk.	Feb. 25	12	Brentford Consolidated	240—245	..	4 18 0
300,000	"	"	9	Do. New	182—185	..	4 17 3
50,000	"	"	5	Do. 5 p.c. Pref.	127—132	..	3 15 9
206,250	"	Dec. 11	4	Do. 4 p.c. Deb.	103—108	..	3 14 1
220,000	Stk.	Mar. 10	10⅝	Brighton & Hove Orig.	212—217	..	4 19 1
246,320	"	"	7½	Do. A. Ord. Stk.	150—155	..	5 0 0
460,000	20	Apl. 14	10	British	38¼—39¼	..	5 1 3
100,000	Stk.	Feb. 25	6	Bromley, Ord. 5 p.c.	112—117	..	5 2 7
165,700	"	"	4½	Do. do. 3½ p.c.	85—90	..	5 0 0
500,000	10	May 12	7	Buenos Ayres (New) Ltd	10¾—11¼*	..	6 4 5
250,000	Stk.	Dec. 30	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
150,000	20	Mar. 10	8½	Cagliari, Ltd.	21—23	..	7 3 6
100,000	10	June 11	10	Cape Town & Dis., Ltd.	14—15	..	6 13 4
50,000	50	May 3	6	Do. 6 p.c. 1st Mort.	51—53	..	5 13 2
1,375,000	Stk.	Feb. 25	5⅝	Commercial 4 p.c. Stk.	105—110	..	4 14 6
536,485	"	"	5	Do. 3½ p.c. do.	103—106	..	4 14 4
442,947	"	Dec. 11	3	Do. 3 p.c. Deb. do.	85—88	..	3 8 2
800,000	Stk.	Dec. 30	7	Continental Union, Ltd.	115—120	..	5 16 8
200,000	"	"	7	Do. 7 p.c. Pref.	140—145	..	4 16 7
575,000	Stk.	Feb. 25	5⅛	Crystal Palace Ord. 5 p.c.	118—123	..	4 6 8
60,000	"	"	5	Do. 5 p.c. Pref.	120—125	..	4 0 0
112,533	"	Jan. 14	5	Do. 5 p.c. Deb. Stk.	135—138	..	3 11 6
486,090	10	Jan. 28	10½	European, Ltd.	18½—19½	..	5 7 8
354,060	10	"	10½	Do. £7 10s. paid	13½—14½	..	5 5 8
15,243,200	Stk.	Feb. 11	4 1/16	Gas-light and Coke — 4 p.c. Ord.	95—97	..	4 10 9
2,600,000	"	"	3⅜	Gas-light and Coke — 3⅜ p.c. max.	89—91	+1	3 16 11
3,799,735	"	"	4	Gas-light and Coke — 4 p.c. Con. Pref.	107—110	+1	3 12 9
4,193,975	"	Dec. 11	3	Gas-light and Coke — 3 p.c. Con. Deb.	87—89	..	3 7 5
258,740	Stk.	Mar. 10	5	Hastings & St. L. 3½ p.c.	90—95	..	5 5 3
70,000	10	Apl. 28	11	Hongkong & China, Ltd.	15—16	..	6 17 6
3,800,000	Stk.	May 12	10	Imperial Continental	202—207*	+2	4 16 7
473,600	Stk.	Feb. 11	3½	Do. 3½ p.c. Deb. Red.	98—100	..	3 10 0
165,242	Stk.	Mar. 10	6	Lea Bridge Ord. 5 p.c.	113—118	..	5 1 8
561,000	Stk.	Feb. 25	10	Liverpool United A	211—213	+2	4 13 11
718,100	"	"	7	Do. do. B	159—161	+½	4 6 11
306,083	"	Dec. 30	4	Do. do. Deb. Stk.	108—110	..	3 12 9
75,000	5	Dec. 11	5	Malta & Medn., Ltd.	4¼—4⅝	..	5 5 3
560,000	100	Apl. 5	5	Met. of — 5 p.c. Deb.	100—103	..	4 17 1
250,000	100	"	4½	Melbourne — 4½ p.c. Deb.	101—102	..	4 8 3
541,920	20	Nov. 12	3½	Monte Video, Ltd.	9¼—10¼	..	6 13 4
1,515,892	Stk.	Feb. 26	4½	Newc'tle & G'tesh'd Con.	103—104	..	4 6 7
405,025	Stk.	Dec. 31	3⅜	Do. 3½ p.c. Deb.	93⅜—94⅜	..	3 14 1
300,000	Stk.	May 12	8	Oriental, Ltd.	135—140*	..	5 14 4
600,000	5	Mar. 29	7	Ottoman, Ltd.	5⅜—6⅜	..	5 12 0
				* Ex div.			

Issue.	Share.	When ex. Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.	GAS COMPANIES.			£ s. d.
205,005	Stk.	Jan. 14	6½	Ply'mth & St'house 5 p.c	121—126	..	4 17 2
851,070	10	Apl. 28	7	River Plate Ord.	11—11¼	−¼	6 1 9
300,000	Stk.	Dec. 30	4	Do. 4 p.c. Deb.	94—56	+1	4 3 4
250,000	10	Mar. 29	7	San Paulo, Ltd.	11—12	..	5 16 8
135,000	Stk.	Mar. 10	10	Sheffield A	237—259	+1	4 3 8
209,984	"	"	10	Do. B	235—237	..	4 4 5
523,498	"	"	10	Do. C	234—236	..	4 4 9
116,106	Stk.	Mar. 29	5	Shrewsbury Ord. 5 p.c.	107—110	..	4 10 11
6,150,000	Stk.	Feb. 11	5⅜	South Met., 4 p.c. Ord.	125—127	+½	4 3 11
1,832 700	"	Jan. 14	3	Do. 3 p.c. Deb.	86—89	..	3 7 5
380,940	Stk.	May 12	5	Southampton Ord.	103—108*	..	4 12 7
87,950	"	Jan. 14	4	Do. 4 p.c. Deb.	100—103	..	3 17 8
120,000	Stk.	Feb. 25	6	Tottenham and Edmonton — A. 5 p.c.	120—125	..	4 16 0
313,020	"	"	4½	Tottenham and Edmonton — B. 3½ p.c.	97—102	..	4 8 3
182,380	10	Dec. 30	8	Tuscan, Ltd.	8⅛—9	..	8 17 10
149,000	10	Jan. 2	5	Do. 5 p.c. Deb. Red.	97—99	..	5 1 0
745,872	Stk.	Mar. 10	5	West Ham, 5 p.c. Ord.	97—102	..	4 18 0
				WATER COMPANIES.			
781,517	Stk.	Dec. 30	12	Chelsea, Ord.	353—358	+1	3 7 0
150,000	"	"	5	Do. 5 p.c. Pref.	142—147	..	3 8 0
160,000	"	"	4½	Do. 4½ p.c. Pref. '75	132—137	..	3 5 8
175,785	"	Mar. 29	4½	Do. 4½ p.c. Deb.	132—137	+2	3 5 8
1,720,560	Stk.	Mar. 23	8	East London, Ord.	218—223	..	3 11 9
654,740	"	Dec. 11	4½	Do. 4½ p.c. Deb.	132—137	+2	3 5 8
1,524,288	"	"	3	Do. 3 p.c. Deb.	88—91	..	3 5 11
700,000	50	"	10	Grand Junction — 10 p.c. max.	136—139	..	3 11 11
310,000	Stk.	Mar. 29	4	Grand Junction — 4 p.c. Deb.	115—120	..	3 6 8
708,000	Stk.	Feb. 25	10	Kent	315—320	..	3 2 6
160,000	"	"	7	Do. New, 7 p.c. max.	217—222	..	3 3 0
1,043,800	100	Dec. 30	11	Lambeth, 10 p.c. max.	314—319	..	3 9 0
406,200	100	"	8⅛	Do. 7⅛ p.c. max.	223—233	..	3 13 0
350,000	Stk.	Mar. 29	4	Do. 4 p.c. Deb.	115—120	..	3 6 8
500,000	100	Feb. 25	10	New River, New Shares	360—370	..	2 14 0
1,000,000	Stk.	Jan. 28	4	Do. 4 p.c. Deb.	118—121	..	3 6 2
902,300	Stk.	Dec. 30	7½	South-wark and Vaux. — Ord.	275—280	..	2 13 7
126,500	100	"	7⅛	South-wark and Vaux. — 7⅛ p.c. max.	215—225	..	3 6 8
489,200	Stk.	"	5	South-wark and Vaux. — 5 p.c. Pref.	144—149	..	3 7 1
1,019,585	"	Mar. 29	4	Vauxhall 4 p.c. A Deb.	115—120	..	3 6 8
1,155,066	Stk.	Dec. 11	10	West Middlesex	297—302	+2	3 6 2
200,000	"	"	4½	Do. 4½ p.c. Deb.	132—137	+2	3 5 8
200,000	"	Mar. 10	3	Do. 3 p.c. Deb.	88—91	..	3 5 11
				* Ex div.			

NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS.

No notice can be taken of anonymous communications. Whatever is intended for insertion in the "JOURNAL" must be authenticated by the name and address of the writer; not necessarily for publication, but as a proof of good faith.

WHITSUNTIDE HOLIDAY.

In consequence of the WHITSUNTIDE HOLIDAY, Communications for the next issue of the "JOURNAL" and Orders respecting ADVERTISEMENTS should be received at the Office NOT LATER than the FIRST POST ON SATURDAY.

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All Communications, Remittances, &c., to be addressed to WALTER KING, 11, BOLT COURT, FLEET STREET, LONDON, E.C.
Telegrams: "GASKING, LONDON." Telephone: P.O. 1571a Central.

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O'NEILL'S OXIDE has a larger annual sale than all other Oxides combined.

SPENT OXIDE purchased in any district.

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Resists 4500° Fahr. Best for GAS-WORKS.

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THE South Metropolitan Gas Company are always open to receive OFFERS of SPENT OXIDE.
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SULPHURIC ACID for Sale, specially suitable for making Sulphate of Ammonia.
BROTHERTON AND CO., LTD., Chemical Manufacturers.
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Apply to E. PADFIELD AND CO., 96 & 98, Leadenhall Street, LONDON, E.C.

JOHN RILEY & SONS, Chemical Manu- facturers, Hapton, near Accrington, are MAKERS of Special SULPHURIC ACID, for Sulphate of Ammonia Making. Highest percentage of Sulphate of Ammonia obtained from the use of this Vitriol, which has now been used for upwards of 50 Years. References given to Gas Companies.

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PREPARED from Pure Iron.
Twice as Rich as Bog Ore.
Gives no Back Pressure.
The Cheapest in the Market.
Can be Lent on Hire.
Can be Exchanged for Spent Oxide.
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BROTHERTON AND CO., LTD., Ammonia Distillers.
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MEWBURN, ELLIS, & PRYOR, Chartered Patent Agents, 70 and 72, Chancery Lane, London, W.C. Telegrams: "Patent London." Telephone: No. 243 Holborn.

GAS TAR wanted.
BROTHERTON AND CO., LTD., Tar Distillers.
Works: BIRMINGHAM, LEEDS, and WAKEFIELD.

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H. GREENE & SONS, Ltd., are pre- pared to give QUOTATIONS to Gas Companies or Corporations for FITTING UP COMPLETE and CARRYING OUT the WORK in its entirety, either in Iron or Compo.
SURREY ENGINEERING WORKS, BLACKFRIARS ROAD, LONDON, S.E.
Telephone: 1693 HOP. Telegrams: "LUMINOSITY."

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ROBINSON BROTHERS, LIMITED. Works: WEST BROMWICH, KNOTTINGLEY, and SPONDON.

J. & J. BRADDOCK (Branch of Meters Limited), Globe Meter Works, OLDHAM, and 45 & 47, Westminster Bridge Road, LONDON, S.E.
WET AND DRY GAS-METERS, PREPAYMENT METERS, STATION METERS, AND GOVERNORS.
REPAIRS RECEIVE PROMPT ATTENTION.
Telephones: 254 Oldham, and 2412 HOP, London.
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THE First Dutch Bog Ore Co., Ltd., (Eerste Hollandsche Yzererts Maaty), ROTTERDAM.
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General Manager (for Scotland)—
J. B. MACDERMOTT, 11, Bothwell St., GLASGOW.

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SPECIALLY prepared for the Manu- facture of SULPHATE OF AMMONIA.
SPENCER, CHAPMAN, AND MESSEL, LIMITED, 36, Mark Lane, LONDON, E.C. Works: SILVERTOWN.
Telegrams: "HYDROCHLORIC, LONDON."
Telephone: 341 AVENUE.

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JOHN E. WILLIAMS AND CO.,
VICTORIA PAINT WORKS, MANCHESTER.
Telegrams: "ENAMEL." National Telephone 1759.

WANTED, Re-engagement as Gas MANAGER or WORKING MANAGER. Twenty-Six Years in present Situation. Thorough knowledge of Erections, Extensions, Mains, and Services. Good Carbonizer. Member of E.C.G.M.A.
Address No. 4203, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

APPOINTMENT wanted as Assistant- MANAGER in Gas-Works. Trained at Engineering Works. Recently prepared Drawings and Superintended erection of large up-to-date Gas-Works. Good knowledge of Chemistry and Gas-Works Routine. Honours Gas Manufacture.
Address No. 4178, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

MECHANICAL Draughtsmen wanted, with knowledge of Structural Ironwork.
Apply, stating Age, Salary, and Experience, to W. J. JENKINS AND CO., LTD., Engineers, RETFORD.

WORKING Manager wanted for a small Country Gas-Works. Make about 4 Million cubic feet. The Company provide House, Garden, Gas, and Coal free.
Apply, stating Wages required, to JOHN W. HOPKINS, Secretary, High Street, Ibstock, near LEICESTER.

TRAVELLER or Representative wanted for the sale of Special Refractory Cement for Gas-Retorts and other Gas-Works purposes. Must have necessary Connection and be a pushing Salesman.
Apply, with full Particulars, References, Age, and Salary or Terms expected, to "REFRACTORY," care of Street's, CORNHILL, E.C.

HECKMONDWIKE GAS COMPANY.

MANAGER wanted for above Works, making about 100 Million cubic feet of Gas per annum.
Candidates must possess a thorough knowledge of Gas Manufacture and Distribution, and be experienced in the working of both Inclined and Horizontal Retorts, with a knowledge of Chemistry and Gas Analysis.
There is a good Residence, with Rates, Coal, and Gas free.
Applications, stating Age, Experience, and Salary required, accompanied with *copies* only of not more than Three recent Testimonials, and marked on the envelope "Manager," to be addressed to the Chairman, as under, not later than Wednesday, the 1st of June, 1904.
JOSEPH STEAD.
Ashfield Villa, Heckmondwike,

OXIDE OF IRON.
(NATURAL.)

BALE & CHURCH will be pleased to send Samples and Quotations, and make Offers for SPENT OXIDE.
BALE'S FIRE CEMENT, PAINT, AND GAS COAL.
5, CROOKED LANE, LONDON, E.C.

COAL GAS TAR wanted.
BEST PRICES GIVEN.
SHARPNESS CHEMICAL COMPANY, LIMITED, Sharpness Docks, GLOS.

SULPHATE OF AMMONIA
SATURATORS and LEAD WORK for Sulphate Ammonia Plants.
For REPAIRS or ALTERATIONS, ring up "0848 BOLTON," or Telegraph "SATURATORS, BOLTON."
Largest Practice and most Up-to-Date Works in Britain.
JOSEPH TAYLOR AND CO., CENTRAL PLUMBING WORKS, BOLTON.

AGENT Wanted by an Old-Established firm of Gas-Retort and Fire-Clay Goods Manufacturers for London and South of England. Preference given to one who has knowledge of the trade.
Apply, by letter, giving Reference and Terms required, to No. 4204, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, at once, by a firm of Gas Engineers, CLERK OF WORKS to take charge of the erection of Inclined Retort-Bench and all Ironwork.
Apply, by letter, stating Experience and Wages required, to No. 4210, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by a firm of Gas Engineers and Contractors in the North of England, two or three DRAUGHTSMEN accustomed to Elevating and Conveying Machinery and Structural Ironwork.
Apply, by letter, stating Age, Experience, and Salary required, to No. 4209, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, on the East Coast, a Working MANAGER for a Gas-Works making about 90 Million cubic feet of Gas per Annum. Must thoroughly understand the routine of Gas Manufacture, Purification, and Testing of Gas, the Setting of Retorts, and Management of Workmen.
Commencing Salary £120 per annum, with House.
Applications, stating Age (not to exceed 45), Experience, and References, to be made in Applicant's own handwriting to No. 4208, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, a Cast Iron Gas-Retort for experimental purposes.
State Particulars of size, &c., and lowest price, to No. 4205, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED to purchase Gas Shares, STOCK, or DEBENTURES of any good dividend-paying Company; also Water-Works Shares and Debentures. Size and location of Company immaterial. Securities that have failed to realize reserves at auction considered.
Address Mr. MARTIN, 41, Shubbery Road, Streatham, LONDON.

GAS-PURIFIERS.

WANTED, 3 or 4 Second-Hand Puri- FIERS, with loose trays for Gas Lime, about 10 feet by 8 feet. Must be in good condition.
State exact measurement offered, and number price delivered, also say where can be seen, to JOHN G. CLARKE, Gas-Works, BRACKLEY.

FOR SALE.

TANGYE Gas-Engine, 5 Brake Horse Power complete, with Water Vessel, Gas-Bag, Exhaust-Box, &c. Perfect condition. Been very little used. Price for early removal £30 f.o.r. King's Lynn. Can be seen by appointment.
Apply to the GAS-WORKS, KING'S LYNN.

GASHOLDER, 40 ft. diameter by 14 ft. deep, in wrought Tank, with six Columns, trellis Girders, and Suspension Gear. In splendid condition. Nearly new.
New GASHOLDER, 40 ft. diameter by 12 ft. deep, with Steel Standards; also new STEEL TANK to contain same.
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ROBERT DEMPSTER & SONS, Ltd., Contractors for Complete CARBONIZING PLANTS and every description of GAS APPARATUS and ELEVATING and CONVEYING PLANT, ROSE MOUNT IRON-WORKS, ELLAND.

FOR SALE—Eight Years of the "Journal OF GAS LIGHTING" and "GAS WORLD" (1896-1903 inclusive). Complete, unbound.
Offers to No. 4207, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

CONDENSER for Sale. In splendid Condition. Cheap. Capacity 250,000 Cubic Feet per Twenty-four hours.
Apply to A. E. LAYTON, Manager, Gas-Works, REDDITCH.

TO BRICK AND CEMENT MAKERS AND OTHERS.

THE Swansea Gaslight Company have FOR SALE good ordinary COKE BREEZE, for shipment, or on rail.
Apply to the MANAGER, Gas-Works, SWANSEA.

GAS PLANT for Sale—I can always offer NEW and SECOND-HAND GAS APPARATUS, including Retorts and Fittings, Condensers, Exhausters, Scrubbers, Washers, Purifiers, Gasholders, Tanks, Valves, Connections, &c. Also a few COMPLETE WORKS. Compare Prices and Particulars before ordering elsewhere.
J. F. BLAKELEY, Gas Engineer, Thornhill, DEWSBURY.

PURIFIERS.

THE Blyth and Cowpen Gas Company have FOR DISPOSAL a set of Four PURIFIERS, each 10 feet square, with 10-inch Connections, Dry Faced Centre and Check Valves, Girders, and Lifting Gear for same. Erected by R. Dempster and Sons, Elland.
Offers to A. C. FAWCETT, Secretary to the Company, Blyth, NORTHUMBERLAND.

A GOOD, Second-hand "Pettigrew's" SULPHATE PLANT FOR SALE—Ammonia Still, Liming Chamber, and Superheater. To be disposed of to make room for larger plant. In Good Condition, and can be seen in working order at the Arbroath Gas-Works.
A grand opportunity for Works proposing to Manufacture Sulphate of Ammonia.
Offers to, and full particulars from, Mr. Alex. C. Young, Gas Manager, ARBROATH, N.B.

PONTYPRIDD URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

THE above Council invite Tenders for the supply of 12,000 Tons of GAS COAL, to be delivered at their Treforest Gas-Works, for the Year ending June 30, 1905.
Tender Forms, with Specification, may be obtained on application to Mr. Edward Jones, Gas Manager, Treforest.
Sealed Tenders, endorsed "Gas Coal," must be received by me not later than June 6, 1904.

J. COLENSO JONES,
Clerk to the Council.

District Council Offices,
Pontypridd, May 12, 1904.

THE Directors of the Sutton, South- coates, and Drypool Gas Company, Hull, invite TENDERS for the supply of 17,000 Tons of Best Silkstone GAS COAL, stating price per ton for each of the following descriptions: Screened, Unscreened, and Cobbles, for delivery, during the Year ending the 30th of June, 1905, in North-Eastern Railway Company's waggons into this Company's Private Siding, Dansom Lane, Hull.
The lowest or any Tender will not necessarily be accepted.
Sealed Tenders to be sent addressed to the undersigned before Twelve o'clock noon on Wednesday, the 25th of May, 1904, marked "Tender for Coal."

By order,
DAVID WOOD,
Secretary.

Offices: St. Mark Street,
Hull, May 13, 1904.

GLOUCESTER GASLIGHT COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the above Company invite TENDERS for the supply of about 33,000 Tons of GAS COAL for One Year from the 1st day of July next, in such monthly quantities as may be required by the Company.
Tenders to state the price delivered at the Midland Railway Sidings, Hempsted, near Gloucester, or the Great Western Railway Wharf, Llanthony, Gloucester; or if sent (as preferred) by Water, the price f.o.b., and also the price delivered at the Gas Company's Wharf on the Gloucester and Berkeley Canal.
Further Particulars and Forms of Tender may be obtained of the undersigned.
Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of the Coal, to be addressed to the Chairman, Gas Offices, Eastgate Street, Gloucester, and delivered not later than Wednesday, the 1st day of June next.
The Directors reserve to themselves the right to accept the whole or any portion of any quantity offered, and do not bind themselves to accept the lowest or any Tender.

By order,
WILLIAM E. VINSON,
Secretary.

Gas Offices, Gloucester,
May 2, 1904.

LEEK URBAN DISTRICT COUNCIL.

TO TAR DISTILLERS AND OTHERS.

TENDERS are invited for the purchase of the surplus GAS TAR and AMMONIACAL LIQUOR produced at the Leek Gas-Works for One, Two, or Three Years commencing the 1st of July, 1904, at per Ton of 2240 lbs. at the Works.
Forms of Tender and further Particulars may be obtained from the Manager of the Gas-Works or the undersigned.
Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Hall, Leek, not later than Monday, the 30th of May inst.
The highest or any Tender will not necessarily be accepted.

By order,
C. HENSHAW,
Clerk.

Town Hall, Leek,
May 16, 1904.

LEEK URBAN DISTRICT COUNCIL.

TO TAR DISTILLERS AND OTHERS.

TENDERS are invited for the supply of 4000 gallons of BENZOL of 90 per cent. quality to the Leek Gas-Works, at per gallon, delivered either at the Leek Railway Station, Canal Wharf, or at the Gas-Works, for One Year, commencing the 1st of July, 1904.
Forms of Tender and further Particulars may be obtained from the Manager at the Gas-Works or the undersigned.
Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Hall, Leek, not later than Monday, the 30th of May inst.
The lowest or any Tender will not necessarily be accepted.

By order,
C. HENSHAW,
Clerk.

Town Hall, Leek,
May 16, 1904.

LEEK URBAN DISTRICT COUNCIL.

TO COLLIERY PROPRIETORS AND OTHERS.

TENDERS are invited for the supply of all or part of 10,000 Tons of GAS NUTS or BEANS delivered at the Leek Station on the North Staffordshire Railway during the Year commencing the 1st of July, 1904.
Forms of Tender and further Particulars may be obtained from the Manager of the Gas-Works or the undersigned.
Sealed and endorsed Tenders, addressed to the Chairman of the Gas Committee, to be delivered at the Town Hall, Leek, not later than Monday, the 30th of May inst.
The lowest or any Tender will not necessarily be accepted.

By order,
C. HENSHAW,
Clerk.

Town Hall, Leek,
May 16, 1904.

MILTON-NEXT-SITTINGBOURNE URBAN DISTRICT COUNCIL,

CONTRACT FOR GAS COALS.

THE above Council invite Tenders for the supply and delivery during the Year ending the 24th of May, 1905, of about 1400 Tons of GAS COALS, to be supplied at such times and in such quantities as the Manager of the Gas-Works shall direct.
Full Information, with Forms of Tenders, can be obtained on application to the Manager, Mr. J. Watson, Gas-Works, Milton-next-Sittingbourne.
Tenders, duly filled in and endorsed "Tenders for Gas Coals," must be delivered to me at the Council's Offices, not later than Twelve o'clock noon, on Monday, the 23rd inst.
The Council do not bind themselves to accept the lowest or any Tender.

By order,
JOHN DIXON, Jun.,
Clerk to the Council.

Town Hall, Milton-next-Sittingbourne,
May 12, 1904.

URBAN DISTRICT COUNCIL, BOROUGH OF NEWRY.

TENDERS FOR GAS COAL.

THE Gas Committee of the above Council invite TENDERS for the supply of from 3500 to 4000 Tons of best screened GAS COAL (with quotation for unscreened Gas Coal at same time) for a period of Twelve Months, to be delivered in such quantities and at such times as may be required by the Committee, and to weigh 20 cwt. to the ton over the Gas Committee's Weighbridge at their Works (said Machine is regularly inspected by Officer under Weights and Measures Act), and delivered *free ex* Ship or Steamer at Albert Basin, Newry.
The Coal to be Fresh Wrought, Dry, and Free from Hards, Smudge, Dirt, Shale, Pyrites, or other objectionable matter for Gas Making.
Further Particulars may be obtained from Mr. B. Gibson, Manager.
Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of the Coal, and where raised, to be addressed to T. P. Ledlie, Esq., Chairman, and delivered to the undersigned not later than Wednesday, the 1st of June.
The Committee reserve to themselves the right to accept the whole or any portion of any quantity offered, and do not bind themselves to accept the lowest or any Tender. They also reserve the power to decline acceptance of any Coal not equal in their belief to that contracted for.

ROBERT H. DOHERTY,
Clerk,
Urban District Council of Newry.

New Town Hall, Newry,
May 14, 1904.

BARNOLDSWICK URBAN DISTRICT COUNCIL.
(GAS AND WATER DEPARTMENT.)

THE above Council invite Tenders for the supply of 2900 Tons of screened GAS COAL for the Year ending June 30, 1905.
Tenders to be sent in on or before May 25, 1904.
Particulars and Form of Tender may be obtained from the undersigned.

J. W. THOMPSON,
Gas and Water Manager.

Town Hall, Barnoldswick,
Yorkshire.

PAIGNTON GAS COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the Paignton Gas Company are prepared to receive TENDERS for the supply of 3800 Tons (or such other quantity as may be agreed on) of best approved GAS COALS, to be delivered in such monthly quantities as may be required by the Company.
Tenders to state the price of the Coal delivered at Paignton Station (Great Western Railway) free of all charges.
The Directors do not bind themselves to accept the lowest or any Tender.
Further Particulars may be obtained on application to Mr. C. G. Dawson, the Company's Manager.
Sealed Tenders, endorsed "Tender for Coal," specifying the description and quality of Coal, to be sent on or before the 11th of June, addressed to the undersigned, at the Gas Offices, 1A, Victoria Street, Paignton.

F. W. PUDDICOMBE,
Secretary.

Paignton, May 12, 1904.

BOROUGH OF BRIGHOUSE.

TENDERS FOR GAS COAL, SCREENED NUTS, CANNEL, AND LIME.

THE Gas Committee are prepared to receive TENDERS for the supply and delivery of GAS COAL, SCREENED NUTS, CANNEL, and Buxton LIME, required at the Mill Lane and Birds Royd Gas-Works during the Year ending June 30, 1905.
Specification and Form of Tender can be obtained on application at the Gas Engineer's Office, Mill Lane, Brighouse.
Sealed Tenders, stating price per Ton delivered at the Gas-Works, or alongside the Gas-Works by the Calder and Hebble Canal, or at the Brighouse Railway Station, must be sent in on or before Wednesday, the 1st day of June, 1904, addressed to the Town Clerk, Municipal Offices, Brighouse, and endorsed on the outside "Tender for Coal" or "Lime," as the case may be.
The lowest or any Tender not necessarily accepted.

By order,
JAMES PARKINSON,
Town Clerk.

Town Clerk's Office,
Brighouse, May 10, 1904.

SOWERBY BRIDGE URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

TENDERS FOR CANNEL AND COAL.

THE Gas Committee are prepared to receive TENDERS for the supply and delivery of 1400 Tons of CANNEL and 14,600 Tons of best screened GAS COALS, or such quantity as may be required for the Gas-Works at Sowerby Bridge and Luddenden Foot during the period of Twelve Months between the 1st day of June, 1904, and the 31st of May, 1905.
Tenders will be received for the whole or any portion of the above quantity.
Specifications, Forms of Tender, and all Information can be obtained on application to the Engineer, Mr. A. W. Bissell, Gas-Works, Sowerby Bridge.
The Gas Committee reserve the right to accept Tenders for the whole or any portion of the quantity offered, and do not bind themselves to accept the lowest or any Tender.
Sealed Tenders, endorsed "Tender for Coal" or "Cannel," to be delivered not later than Twelve o'clock noon on Wednesday, May 25, 1904, and addressed to

R. W. EVANS,
Solicitor and Clerk to the Council.

Commercial Bank Chambers, Halifax,
May 5, 1904.

SWADLINCOTE DISTRICT URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

THE Gas Committee of the above Council are prepared to receive TENDERS for surplus TAR and LIQUOR made at their Gas-Works during the Twelve Months ending June 30, 1905.
The Tar and Liquor will be loaded into the Contractors' Tanks at the Gas-Works.
Tenders, stating Price per Ton per degree Twaddel at 60° for Liquor, and at per Ton for Tar.

LIME.

The supply of about 150 Tons of Best Hand-Picked Buxton LIME, and about 150 Tons of LIME REFUSE, to be delivered at the Gas-Works in such quantities and at such times as may be required during the Twelve Months ending June 30, 1905.

GAS COAL.

The supply of 4000 Tons (more or less) of best screened GAS COAL, to be delivered in such quantities as may be required during the Twelve Months ending June 30, 1905.
All Particulars and Form of Tenders may be obtained from Mr. G. B. Smedley, the Engineer and Manager, on receipt of stamped addressed foolscap envelope.
Tenders must be on the prescribed Forms and accompanied by Analysis, and must be delivered to the undersigned on or before Twelve noon, June 1, 1904, endorsed "Tar and Liquor," "Lime," "Gas Coal," as the case may be.
The Council do not bind themselves to accept any Tender.

W. A. MUSSON,
Clerk to the Council.

Gas-Works, Swadlincote,
May 11, 1904.

FARNHAM GAS COMPANY, LIMITED.

THE Directors of the above Company invite TENDERS for the supply of 4000 Tons of Good Clean Fresh Worked GAS COAL, screened and unscreened, delivered at Farnham Station (L. & S. W. Rly.), in such quantities and at such times as required during the Year ending May 31, 1905.

Forms of Tender may be obtained on application.

Tenders, endorsed "Coal," to be delivered to the undersigned not later than the 4th June next.

S. J. SYMONDS,
Manager and Secretary.

Gas-Works, Farnham,
May 12, 1904.

EXMOUTH GAS COMPANY.

THE Directors invite Tenders for the supply of 960 yards of 6-inch Cast-Iron Socket and Spigot GAS-PIPES, in 9 feet lengths; also a few SPECIALS, delivered at Exmouth Station.

Tenders, endorsed "Tender for Gas-Pipes," to be sent not later than Tuesday, May 17, 1904, addressed to the Chairman of the Company, and to state the approximate weight per pipe, pressure tested at, the price per ton coated, and the time of delivery.

By order of the Board,
JAMES T. FOSTER,
Secretary and Manager.

Exmouth, May 5, 1904.

BOROUGH OF TIVERTON.

TENDERS FOR COAL.

THE Lighting Committee are prepared to receive TENDERS for about 3500 Tons of GAS COAL, to be delivered at the Railway Siding adjoining their Gas-Works at Tiverton during One Year.

Further Particulars and Form of Tender (which must be used) may be obtained on application to the Manager.

Sealed Tenders, endorsed "Tender for Gas Coal," and addressed to the undersigned, must be received on or before the 4th day of June next.

By order,
C. M. HOLE,
Town Clerk.

Tiverton, May 12, 1904.

BOROUGH OF TORQUAY.

THE Gas-Works Committee of the Torquay Town Council are prepared to receive TENDERS for the supply of 3000 Tons of approved GAS COAL delivered free into Stores at the St. Mary Church Gas-Works.

Further Particulars and Forms on which Tenders must be submitted may be obtained at my Office, Town Hall, Torquay.

Sealed Tenders, endorsed "Tenders for Coal," to be sent to the undersigned not later than Ten a.m. on Tuesday, the 31st of May, 1904.

The lowest or any Tender will not necessarily be accepted.

(Signed) FREDK. S. HEX,
Town Clerk.

Town Hall, Torquay,
May 14, 1904.

BOROUGH OF CLITHEROE.
(GAS DEPARTMENT.)

TENDERS FOR GAS COAL.

THE Gas Committee invite Tenders for screened GAS COAL, NUTS, SLACK, and CANNEL, to be delivered at the Gas-Works Siding during the Year ending June 30, 1905.

Particulars and Forms of Tender may be obtained from the undersigned.

Sealed Tenders, endorsed "Tender for Gas Coal," addressed to the Chairman of the Gas Committee, to be delivered at my Office on or before Saturday, the 28th of May, 1904.

ROBT. BARRETT,
Manager.

Gas-Works, Clitheroe,
May 10, 1904.

DEVONPORT CORPORATION.
(GAS DEPARTMENT.)

THE Gas Committee of the Devonport Corporation are prepared to receive TENDERS for the supply of 35,000 Tons of Durham GAS COAL, to be delivered during the Year ending the 30th of June, 905.

The Coal is to be delivered c.i.f. at Tamar Wharf, Devonport; and Forms of Tender and Specification may be obtained from the undersigned.

Sealed Tenders, endorsed "Tenders for Coal," and addressed to R. J. Fittall, Esq., Town Clerk, Devonport, are to be delivered at the Town Clerk's Office, on or before the 25th day of May, 1904.

SIDNEY E. STEVENSON,
Engineer and Manager.

Gas-Works, Devonport.

SHEFFIELD UNITED GASLIGHT COMPANY.

GASHOLDER.

THE Directors of the above Company are prepared to receive TENDERS for a GASHOLDER, 247 feet diameter by 166 feet high, to be erected at their Neepsend Works.

Drawings and Specification may be obtained from the Company's Engineer (Mr. John W. Morrison) on payment of Two Guineas, which will be returned on receipt of a *bonâ-fide* Tender together with the Drawings and Specification.

Sealed Tenders and priced out schedule, marked "Tender for Gasholder," and addressed to the undersigned, must be delivered by post not later than the first post on Monday, June 6.

The Directors do not bind themselves to accept the lowest or any Tender.

HANBURY THOMAS,
General Manager and Secretary.

Commercial Street, Sheffield,
May 5, 1904.

NORMANTON GAS COMPANY.

TENDERS FOR GAS COAL.

THE above Company invite Tenders for the supply of 5500 Tons of GAS COAL (double Screened Nuts, Unscreened, or Screened Coal), to be delivered during the Year ending June, 1905, or for the same quantity per Year over a period of Two or Three Years.

Forms of Tender may be had from the undersigned.

Tenders to be delivered at the Offices of the Company on or before the 27th inst.

E. H. HUDSON,
Secretary and Manager.

Normanton, May 9, 1904.

ACCRINGTON DISTRICT GAS AND WATER BOARD.

THIS Board invite Tenders for the surplus TAR and AMMONIACAL LIQUOR which may be produced at the Accrington and Great Harwood Gas-Works of the Board during the Year from the 1st of July next to the 30th of June, 1905. The estimated quantity of Tar is 2000 Tons, and Liquor 6000 Tons.

Sealed Tenders, endorsed "Tar and Liquor," addressed to the Chairman of the Board, must be in my hands on or before Friday, the 3rd of June.

Forms of Tender may be obtained on application.

By order,
CHARLES HARRISON,
General Manager.

General Offices, Accrington,
May 14, 1904.

LURGAN GASLIGHT AND CHEMICAL COMPANY, LIMITED.

THE Directors invite Tenders for the supply of 3500 Tons of best quality Screened GAS COAL, delivered into the Works at Lurgan, or placed on lighters or on rail at Belfast.

The Coal must be delivered in such quantities and at such times as the Directors may fix; each cargo to be accompanied by a certificate as to place of origin.

Tenders (in sealed envelope), accompanied by reference to Gas-Works using the Coal offered, should reach me not later than 10.30 on Monday, June 6, 1904.

The Directors do not bind themselves to accept the lowest or any Tender.

FRED. W. MAGAHAN,
Secretary.

Gas-Works, Lurgan,
May 2, 1904.

SKIPTON URBAN DISTRICT COUNCIL.

TENDERS FOR GAS COAL.

THE Council invite Tenders for the supply of about 7000 Tons of Best GAS COAL (Screened, Unscreened, and Nuts), to be delivered free at the Railway Station, Skipton, or at the Council's siding adjoining the Gas-Works on the Leeds and Liverpool Canal, between June 30, 1904, and July 1, 1905, in monthly quantities..

No form of Tender issued.

Further Particulars as to periods and quantities of deliveries, &c., may be obtained from the Manager, Mr. J. H. Woodward, Gas-Works, Skipton; and Tenders, endorsed "Tender for Gas Coal," are to be sent to him on or before Monday, June 6, 1904.

The lowest or any Tender not necessarily accepted.

RICHARD WILSON,
Clerk to the Council.

May 13, 1904.

CORPORATION OF DROITWICH.
(GAS DEPARTMENT.)

THE Gas Committee invite Tenders for the supply of 1800 to 2000 Tons of best screened GAS COAL or NUTS during the ensuing Twelve Months ending the 30th of June, 1905, to be delivered at Droitwich (G. W. Railway).

Specification and Form of Tender may be obtained from the undersigned.

The Committee reserve the right to accept Tenders for the whole or any portion of the quantity offered, and do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, endorsed "Tenders for Gas Coal," to be sent to S. J. Tombs, Esq., Town Clerk, Droitwich, not later than the 26th of May, 1904.

SAMUEL G. ASKEW,
Manager.

Gas Office, Droitwich,
May 14, 1904.

MANSFIELD CORPORATION.
(GAS DEPARTMENT.)

TENDERS FOR GAS COAL AND CANNEL.
TENDERS FOR TAR AND AMMONIACAL LIQUOR.

COAL.

THE Gas Committee are prepared to receive TENDERS for 2000 Tons of CANNEL and 9000 Tons of best screened GAS COAL, delivered at Mansfield Station for One Year from the 1st of June, 1904, to the 31st of May, 1905.

TAR AND LIQUOR.

TENDERS for surplus TAR and LIQUOR made from the 1st of July, 1904, to the 31st of May, 1905. Tenders for Liquor to be made either at a fixed price per Ton or on the Sliding-Scale regulated by the price of Sulphate.

Tenders, endorsed "Coals" or "Tar and Liquor," as the case may be, to be sent to J. Harrop White, Esq., Town Clerk, Mansfield, on or before the 30th of May, 1904.

Particulars and all other Information from the undersigned.

NOTE: No Special Form of Tender provided.

The Committee do not bind themselves to accept the lowest or any Tender.

ARTHUR GRAHAM,
Engineer and Manager.

Gas-Works, Mansfield,
May 6, 1904.

THE East Dereham Urban District Council are prepared to receive TENDERS for the supply of about 1600 Tons of screened GAS COAL for the ensuing Year.

Conditions and Forms of Tender to be had of the undersigned.

Tenders, marked "Coals," to be sent in by the 30th of May to

B. H. VORES,
Clerk to the Urban District Council.

East Dereham, May 6, 1904.

OXFORD GASLIGHT AND COKE COMPANY.

THE Directors invite Tenders for the supply of about 34,000 Tons of Best Screened GAS COAL to be delivered to their Siding (G.W.R.) during the Year ending June 30, 1905.

Tenders, addressed to the Chairman of the Oxford Gaslight and Coke Company, and endorsed "Tender for Coal," to be delivered by June 11, 1904.

By order,
JAMES ELDRIDGE,
Engineer and Manager.

CIRENCESTER GAS COMPANY, LIMITED.

THE Directors are prepared to receive TENDERS for the supply of about 4000 Tons of best GAS COAL, to be delivered at the Watermoor Station of the Midland and South-Western Junction Railway, during the Twelve Months ending June 30, 1905.

Tenders to be sent not later than June 2 next to

JOHN P. BEECHAM,
Secretary.

12, Silver Street, Cirencester,
May 14, 1904.

TENDERS FOR TAR AND LIQUOR.

TENDERS are invited for the surplus TAR produced at the Sutton, Reigate (Surrey), and Newhaven (Sussex) Gas-Works; the approximate quantities for disposal being 4000, 1400, and 500 barrels respectively.

The Directors of the above Companies reserve the right to dispose of the whole or only part of the LIQUOR, the total quantity being approximately twice that of the Tar.

Tenders to be sent to GEO. MEAD-ROBINS, Gas Offices, SUTTON, on or before Tuesday, May 31 next, marked "Tenders for Tar and Liquor."

THE BRISTOL GAS COMPANY.

TENDERS FOR GAS COAL AND CANNEL.

THE Directors of the above Company are prepared to receive TENDERS for the supply of their requirements of GAS COALS during the Yea ending the 30th of June, 1905.

Particulars and Forms of Tender may be obtained on application to the undersigned, to whom also Tenders, sealed and endorsed "Tender for Coal," must be delivered not later than Ten a.m. on Wednesday, the 1st day of June next.

JOHN PHILLIPS,
Secretary.

Chief Offices: Canons' Marsh,
Bristol, May 5, 1904.

UTTOXETER GAS-WORKS, LIMITED.

THE Directors of the above Company are prepared to receive TENDERS for the supply of 2500 Tons of good GAS COAL (screened) or large Nuts.

Forms of Tender may be obtained on application to the undersigned.

Tenders to be delivered, on or before the 6th of June, 1904, addressed to the Chairman of the Gas Company, endorsed "Tender for Gas Coal."

The Directors do not bind themselves to accept the lowest or any Tender.

W. MURRAY,
Engineer and Manager.

Gas-Works, Uttoxeter,
May 10, 1904.

CLACTON URBAN DISTRICT COUNCIL.

THE above Council are prepared to receive TENDERS for the supply and delivery of about 50 Tons of Cast-Iron PIPES and CONNECTIONS.

Copy of the Specification and Form of Tender may be obtained from the Council's Engineer, Mr. Sydney Francis, Assoc. M. Inst. M. E., Town Hall, Clacton-on-Sea.

Sealed Tenders, endorsed "Tenders for Pipes," to be delivered to the undersigned not later than noon on Monday, the 30th of May, 1904.

The Council do not bind themselves to accept the lowest or any Tender.

GEO. T. LEWIS,
Clerk to the Council.

Town Hall Buildings,
Clacton-on-Sea, May 5, 1904.

CANTERBURY GAS AND WATER ACT, 1890.

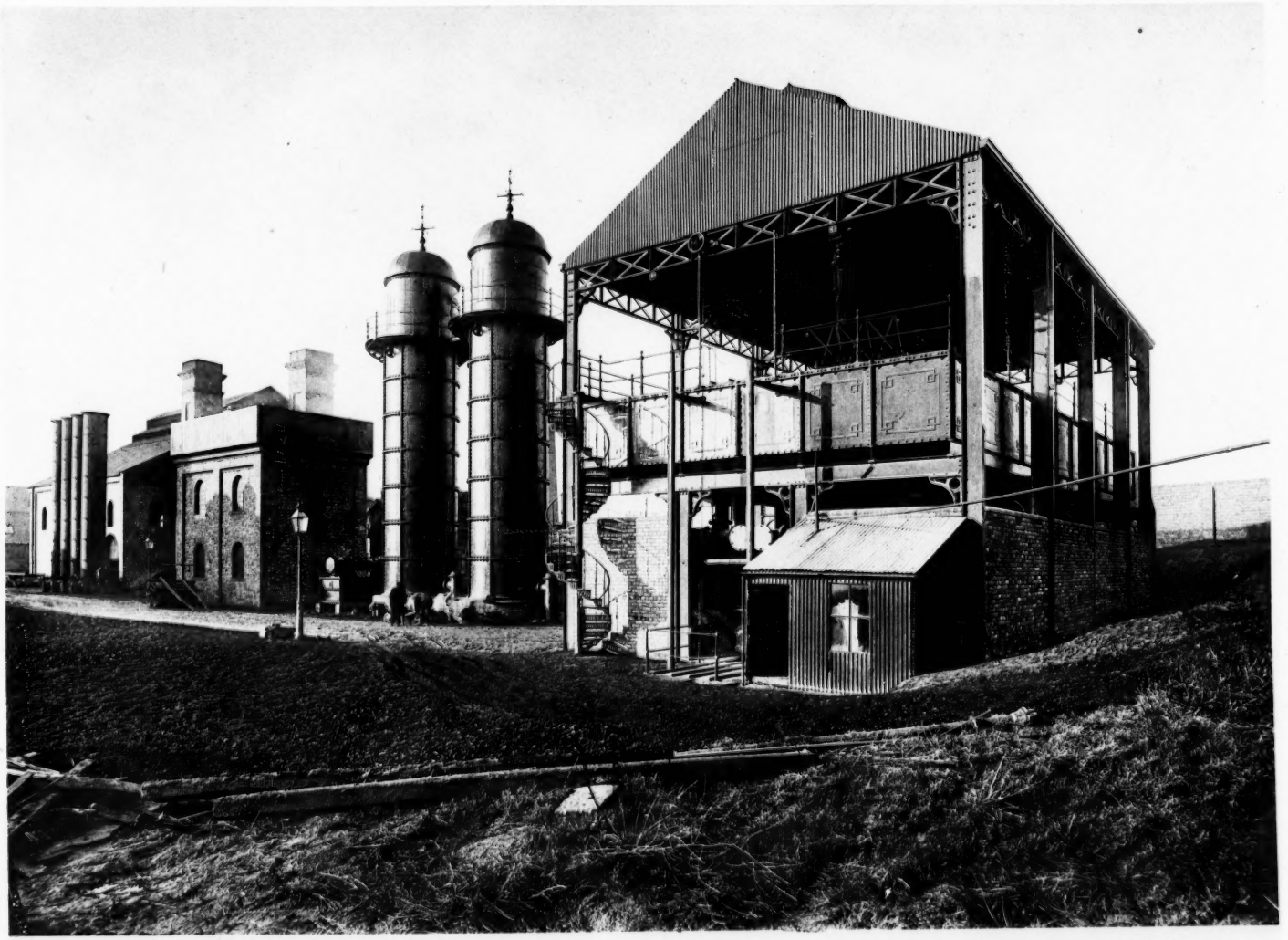
SALE OF NEW "A" AND "B" STOCKS
IN THE
CANTERBURY GAS AND WATER COMPANY.

MR. FRANK AMOS is instructed by the Directors to SELL BY AUCTION, at the Mart, St. Margaret's Street, Canterbury, on Wednesday, May 18, 1904, at Three o'clock p.m. precisely.

£2500 NEW "A" AND "B" STOCKS
IN THE
CANTERBURY GAS AND WATER COMPANY

in 250 Lots of £10 each, authorized by the above-named Act.

Particulars and Conditions of Sale may be obtained of the Secretary, at the Offices of the Company, Castle Street, Canterbury, or of Mr. FRANK AMOS, F.S.I., 8, The Parade, CANTERBURY.



Shrewsbury Gas Light Company. W. Belton, A.M.I.C.E., Engineer.

CONDENSERS, OVERHEAD TANK, SCRUBBERS, WASHER, PURIFIERS AND BUILDINGS,

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Printed for Walter King, by King, Sell & Olding, Ltd.; and published by him at 11, Bolt Court, Fleet Street, in the City of London.—Tuesday, May 17th, 1904.

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TAR Contracts Wanted on the Sliding-Scale or at Fixed Prices.
Managers and Secretaries desirous of selling to best advantage please communicate with DENT AND CO., Ouse Chemical Works, SELBY.

DEAL AND WALMER GAS COMPANY.

ISSUE OF £4700 NEW STOCK.

THE Directors invite Tenders for the purchase of this STOCK, which is entitled to a Maximum Dividend of £5 per cent. per annum.
The paid-up Capital of the Company in Shares and Stock is £36,050.
The full authorized dividends have been regularly paid for the last Twenty Years, with the exception of one Half Year, when 1 per cent. less than the maximum of 10 per cent. was paid on the "A" Shares.
The net profits of the last Half Year were £2871; and the consumption of gas has nearly doubled in Ten Years. Large reserve fund.
Particulars and Forms of Tender (to be sent in by the 24th of May, 1904) can be had of the SECRETARY, Queen Street, DEAL.

ISSUES BY AUCTION OF GAS AND WATER STOCKS AND SHARES.

MR. ALFRED RICHARDS begs to notify that his ISSUES by AUCTION under PARLIAMENTARY POWERS of STOCKS and SHARES in LONDON, SUBURBAN, and PROVINCIAL GAS and WATER COMPANIES take place PERIODICALLY at the Mart, TOKENHOUSE YARD, E.C.
Terms for Issuing such Capital, and also for including Gas and Water Stocks and Shares belonging to Private Owners in these Periodical Sales, can be obtained on application at MR. ALFRED RICHARDS' OFFICES, 18, FINSBURY CIRCUS, E.C.

By order of the Directors of the
HASTINGS AND ST. LEONARDS GAS COMPANY.

NEW ISSUE OF £12,000 FOUR PER CENT. PERPETUAL DEBENTURE STOCK
(or such amount as will produce, including premiums, the sum of £12,158 8s. 9d.).

MR. ALFRED RICHARDS will Sell the ABOVE BY AUCTION, at the Mart, E.C., on Tuesday, the 7th of June, at Two o'clock, in Lots.
Particulars of the AUCTIONEER, 18, FINSBURY CIRCUS, E.C.

By order of the Directors of the
SOUTH ESSEX WATER-WORKS COMPANY.

NEW ISSUE OF £5000 ORDINARY STOCK.

MR. ALFRED RICHARDS will Sell the ABOVE BY AUCTION at the Mart, E.C., on Tuesday, June 7, at Two o'clock, in Lots.
Particulars of the AUCTIONEER, 18, FINSBURY CIRCUS, E.C.

By Order of the Directors of the
CLEETHORPES GAS COMPANY.

MR. EDWARD GARVEY will Sell by AUCTION, at the Yarborough Hotel, Grimsby, on Friday, the 27th of May, 1904, at 3.30 p.m. precisely, in Lots of £100 nominal value,

£12,000 NEW ORDINARY STOCK OF THE CLEETHORPES GAS COMPANY.

This Stock, which is issued under the provisions of the Cleethorpes Gas Act, 1900, ranks for a Standard Dividend of £5 per cent. per annum, subject to the Sliding-Scale, under which, at the present price of Gas, the authorized rate of Dividend is £6 10s. per cent. per annum.
Particulars may be obtained of the SECRETARY, Gas Office, CLEETHORPES, the AUCTIONEER, and of Messrs. BATES AND MOUNTAIN, Solicitors, GRIMSBY.

SALE OF GAS PLANT AND BUILDINGS.

HAPPISBURGH LIGHTHOUSE, NORFOLK,
ABOUT 5 MILES FROM STALHAM (M. & G. N. R.).

H. J. LIMMER is favoured with in- structions from the Elder Brethren of Trinity House to SELL BY AUCTION, on the premises (unless previously disposed of by Private Treaty), on Tuesday, June 7, 1904, commencing at Twelve o'clock, the entire GAS LIGHTING PLANT and GAS-HOUSE in use at the above Lighthouse until Jan. 10 last; also a CORRUGATED IRON COTTAGE, containing Four Rooms and Offices.
The Plant is capable of making about 20,000 cubic feet of Gas every Twenty-four hours, with a Storage capacity of about 10,000 cubic feet.
The Plant will first be offered as a whole, and if not then sold, will be put up in Lots, according to catalogue.
The Auctioneer is open to receive Offers for a Sale by private treaty prior to the Auction.
Catalogues and Conditions of Sale may shortly be obtained on application to the TRINITY HOUSE, LONDON; the HEAD LIGHTKEEPER, HAPPISBURGH; and from the AUCTIONEER, Auction Offices, CROMER, SHERINGHAM, and MUNDESLEY.

THOMAS DUXBURY & CO.,
16, DEANSGATE, MANCHESTER.

Best Gas Coal and Cannel, giving High Illuminating Power, Large Yield per ton, and reasonable in Price.

Telegrams: "DARWINIAN, MANCHESTER."
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REPORTS OF DISTRICT GAS ASSOCIATIONS FOR 1903.

The publication of these Volumes commenced in 1883, and most of them are still on sale.

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97, WELLINGTON STREET, GLASGOW.

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UNEQUALLED.

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MIRFIELD
BLACK BED GAS COAL.

Prices and Analysis on application.

MIRFIELD (GAS-COAL) COLLIERY COMPY.
RAVENSTHORPE, NEAR DEWSBURY.

HEATHCOTE GAS COAL.

Rich in Illuminating Power and yield of Gas.
Above the Average in Weight and Quality of Coke.
Maintains a High Standard in Residuals.

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JAMES OAKES & CO.,
ALFRETON IRON-WORKS, DERBYSHIRE,
AND
Wenlock Iron Wharf, 21 & 22, Wharf Road, CITY ROAD, LONDON, N.,

Manufacture and keep in Stock at their Works (also large stock in London)
PIPES and CONNECTIONS, 1½ to 48 inches in diameter, and make and erect to order RETORTS, PURIFIERS, and TANKS, with or without planed joints, COLUMNS, GIRDERS, SPECIAL CASTINGS, &c., required by Gas, Water, Railway, Telegraph, Chemical, Colliery, and other Companies.

NOTE.—Makers of HORSLEY'S PATENT SYPHONS. These are cast in one piece, without Chaplets; doing away with Bolts, Nuts, and Covers, and rendering Leakage impossible.

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OUGHTIBRIDGE, near SHEFFIELD,
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SILICA BLOCKS, BRICKS, AND CEMENT
OF SUPERIOR QUALITY
FOR GAS-FURNACES.

Trade Mark: "SILICA."

These Goods (largely used in Gas, Glass, Iron, and Steel Works) are, on account of their
GREATER DURABILITY,
Strongly recommended where EXCESSIVE HEATS have to be maintained.

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TWO GOLD MEDALS
in Six Months.

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PETROLEUM GAS SYNDICATE
Supply and erect Complete Installations of their
PETROGENE PATENT GAS PLANT
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PETROGENE GAS is the most suitable Illuminant for all Towns, Villages, Factories, Institutions, &c., where a Cheap and Efficient Lighting System is required. It is equally suitable for Heating and Power purposes, and may be used with ordinary Gas Fittings, Stoves, Engines, &c. It may also be used in conjunction with Coal Gas, and affords Gas Companies a ready means of increasing their output without the expense of additional storage.
The Syndicate is prepared to entertain offers of sale of small Gas-Works, whether profit earning or not.
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Special Lumps, Tiles, and Bricks for Regenerative and Furnace Work.
SHIPMENTS PROMPTLY AND CAREFULLY EXECUTED.

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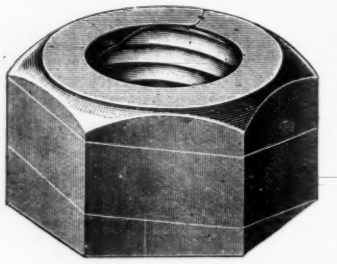

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SHEAF WORKS, SHEFFIELD,
MANUFACTURERS OF
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STEEL OF ALL DESCRIPTIONS.
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STATION METER.
Efficiency Demonstrated.
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THE
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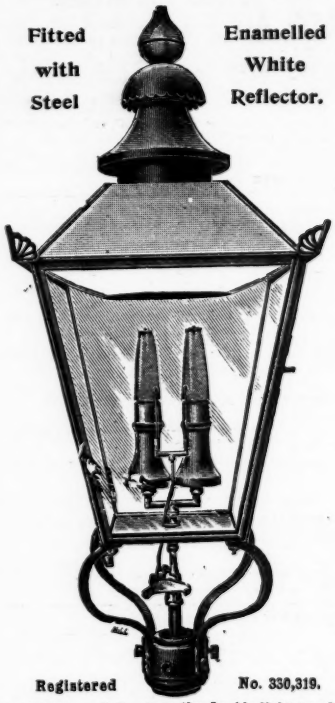

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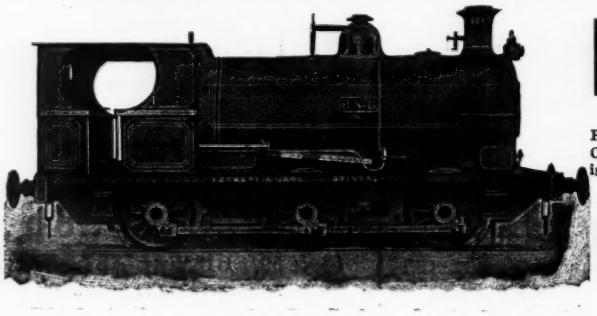

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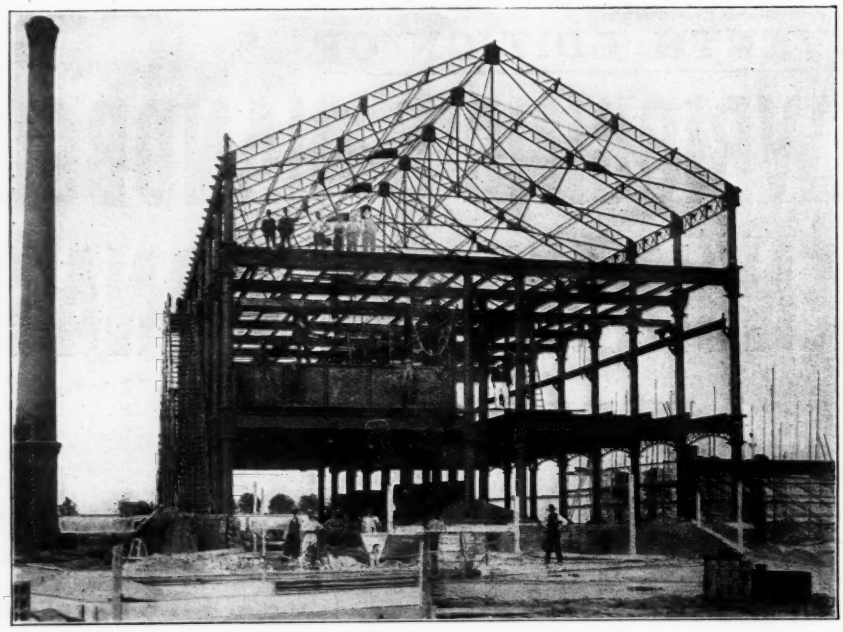

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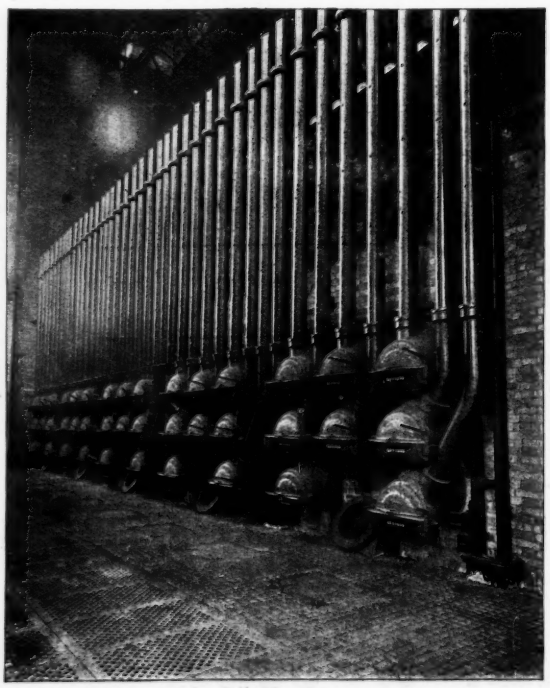

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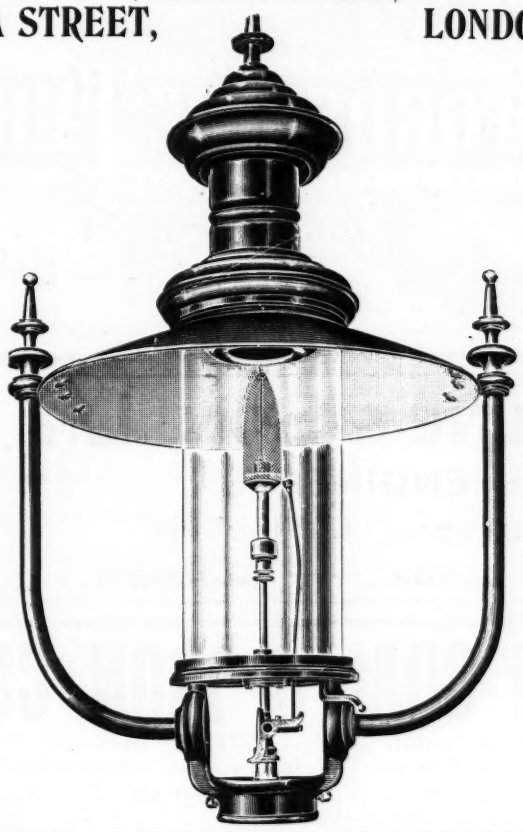

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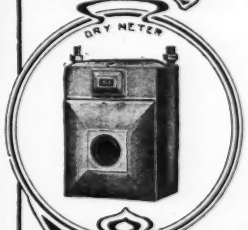

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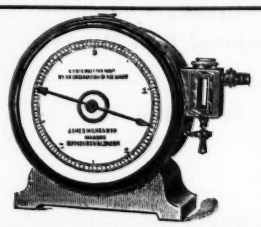

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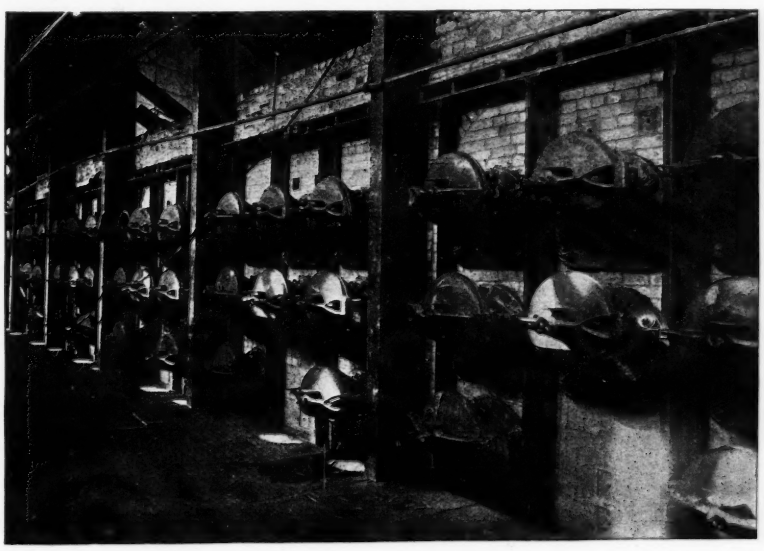

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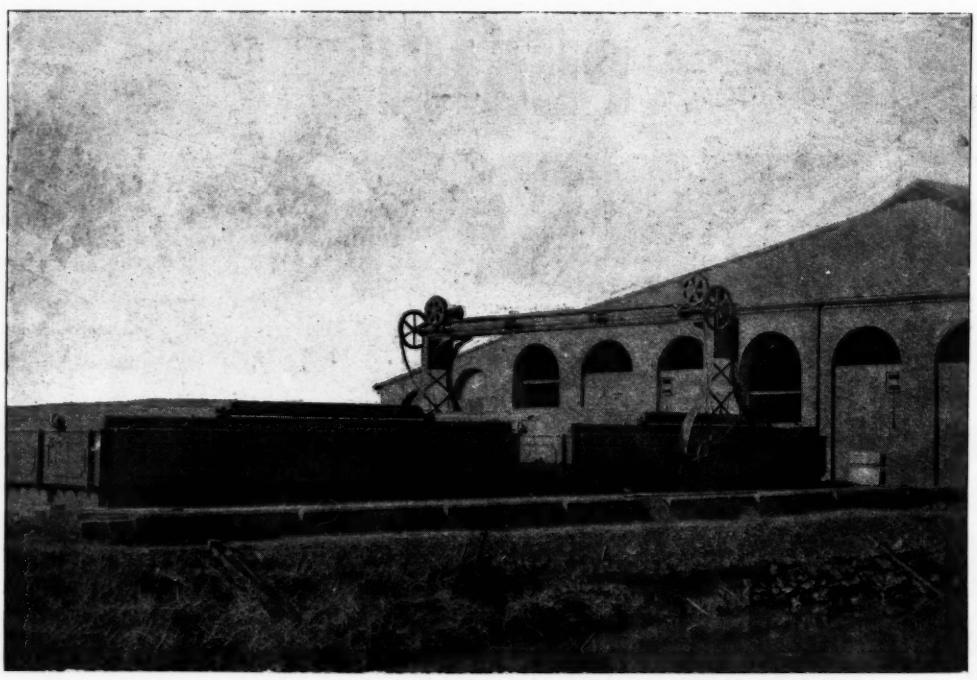
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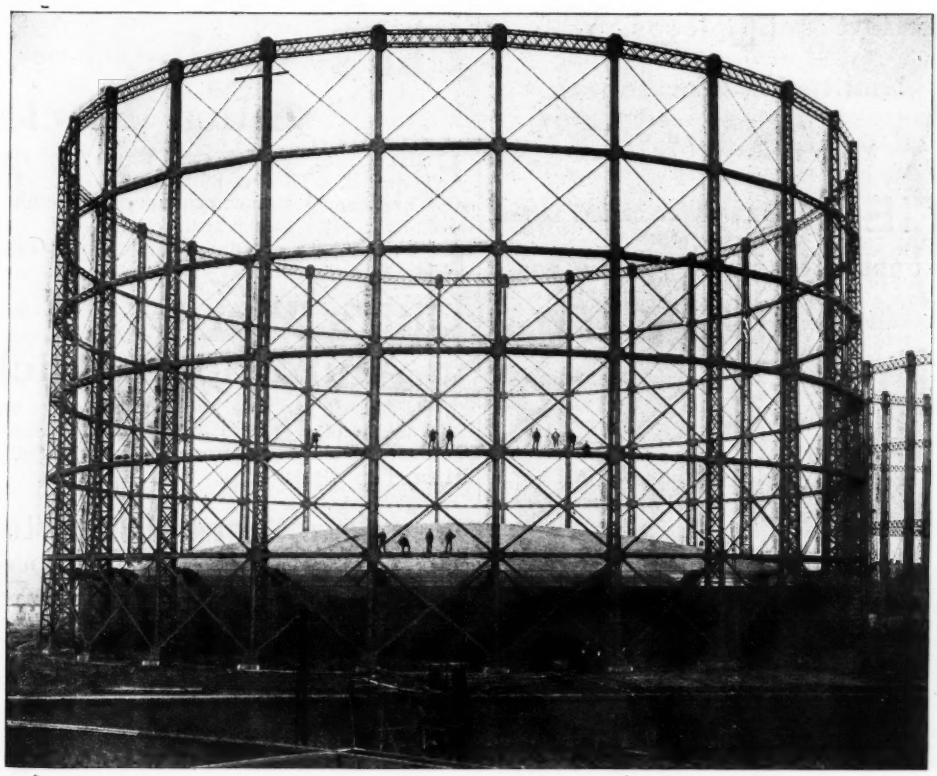

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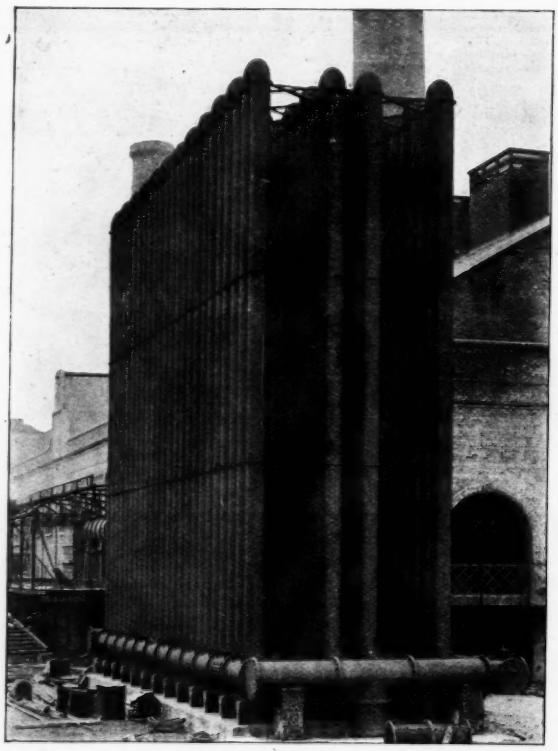

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